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The Handbook of **Drugs and Society**

Edited by **Henry H. Brownstein**

WILEY Blackwell

The Handbook of Drugs and Society

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For my grandchildren

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Part I

Understanding Drugs in Society

Drugs and Society

Henry H. Brownstein

Introduction

When the battle to rescue Helen, the daughter of the god Zeus, from Troy was over and the war was won, Odysseus set sail for home to rejoin his wife Penelope and his family in northwest Greece. His resourcefulness and heroism won him great acclaim but the journey home was long and arduous. Fantastic obstacles and challenges delayed him but he did not give up and continued on his way. Unfortunately for Odysseus and Penelope, the fall of Troy took place more than 3,000 years ago when communication across seas and continents was not what it is today. He could not call her by telephone to tell her where he was or that he might be delayed, nor could he send her an e-mail or report his status on Facebook or Twitter. So as the years passed Penelope was losing hope. One day during this time Telemachus, the son of Odysseus, traveled with his mother and family to celebrate the marriage of the daughter of the king and queen of Sparta, Menelaus and Helen, the woman whom Odysseus helped rescue from Troy. The king and queen recognized Telemachus as the son of Odysseus and during the celebration told him stories of the great deeds and adventures of his father at Troy. Menelaus then recounted the challenges of his own journey home and shared news he heard along the way that Odysseus was still alive but held captive on an island. Telemachus decided to set sail to find his father. Meanwhile, in attendance at the wedding celebration were many rival suitors for the hand in marriage of his mother Penelope (and of course the wealth that rightfully belonged to Odysseus). Learning that Telemachus planned to look for his father, they plotted to kill them both should they return. Naturally, when Penelope heard of this plot she became distressed, thinking that she would surely lose not only her husband but her son as well. To help her forget her sadness and find serenity Helen put

a potion in the wine and gave it to Penelope. A few hundred years after the events were believed to have taken place, the ancient Greek poet Homer told the tale of Odysseus and his journey home. According to his modern translator, concerning Helen's potion he said:

it entered into Helen's mind to drop into the wine they were drinking an anodyne, mild magic of forgetfulness. Whoever drank this mixture in the wine bowl would be incapable of tears that day—though he should lose mother and father both, or see, with his own eyes, a son or brother mauled by weapons of bronze at his own gate. The opiate of Zeus's daughter bore this uncanny power. (Fitzgerald 1963:59)

As Homer told the tale, that night in her sleep Penelope saw the goddess Athena who sent her a phantom in the form of her sister, Iphtime, to tell her not to worry.

It is possible that in Robert Fitzgerald's mid-twentieth-century award-winning translation of the original Homeric epic poem the word "opiate" was used in a generic sense and not necessarily as a direct reference to opium itself. Nonetheless, by the twentieth century scientists were arguing that what Helen gave to Penelope was in fact an extract of the opium poppy (Lewin 1931). More recently and more broadly, by the later years of the century in his history of opium and opiates Michael Brownstein, a cell biologist at the National Institute of Mental Health, wrote, "Despite difficulties in interpreting ancient writings and archeological data, a picture of opium use in antiquity does emerge from them" (Brownstein 1993:5391). The point here is that thousands of years ago, people living in society here on Earth had substances that today we would call drugs and they were using those drugs to make themselves or others around them feel better, or at least different. Clearly drugs have been part of society for a long time.

In essence those substances we call drugs include natural and manufactured chemical compounds that when ingested by individuals pass from their body to their brain, interfere with chemical signals normally transmitted by the brain, and affect their body or mind in one way or another (cf. Lewin 1931). Over the course of history, people living among other people in society have used drugs for a variety of reasons including, for example, medicinal or therapeutic purposes to heal what ails them (Chou et al. 2009; Kalso and Vainio 1990; Mather 1995; Reisman 2011; World Health Organization 2007) or egoistic purposes to find comfort, contentment, or simply pleasure in their daily lives (Goode 2012; Huxley 1954; Marlatt 1996; O'Malley and Valverde 2004; Weil 1972). Today, thanks to the wonders of modern science and the prevailing principles and practices of contemporary business, we have lots more drugs to choose from and those drugs can do lots more things for us and the people around us.

Some of the drugs available to people in society today are accessible under the law and some are only accessible and able to be used outside of legal authority. Considering just the drugs that are sanctioned by the laws of various societies around the world, Thomson Reuters in their annual pharmaceutical industry *Factbook for 2014* reported, "Global pharmaceutical sales reached an all-time high of

approximately \$980 billion in 2013 and are expected to rise to \$1 trillion this year” (<http://thomsonreuters.com/press-releases/092014/pharmaceutical-factbook-2014>; accessed May 25, 2015). Some of those legal drugs are available over the counter in a variety of retail establishments to almost anyone who can pay for them, and others cannot be obtained without special permission, such as a prescription from a licensed medical provider. According to the United States Food and Drug Administration (FDA), an agency “responsible for protecting the public health by assuring the safety, efficacy and security of human and veterinary drugs, biological products, medical devices, our nation’s food supply, cosmetics, and products that emit radiation,” there are more than 300,000 drug products covering 80 therapeutic classes of drugs available over the counter to anyone who asks for them at retail establishments across the country (<http://www.fda.gov/AboutFDA/WhatWeDo/default.htm>, accessed May 25, 2015). Clearly in contemporary society a lot of different drugs are easily available under the law to a lot of different people for a lot of different purposes.

Thanks to centuries of social and political turmoil and the values that rose to prominence as generations of people and eras of civilized societies struggled over resources, power, and control, today we have layers and layers of formal and informal social norms to guide us and, to the extent possible, to regulate our choices about everything, including what drugs we use, when we use them, how we use them, and why we use them (cf. Sumner 1907). Laws are instituted in society as formalized norms so are housed in a variety of recognized social institutions with governing authority. Through public programs and policies they present themselves to us as enforceable guidelines and standards for behavior and action. But science and history have shown us that different drugs at different times in different circumstances have different outcomes in terms of both social and personal experience. Some drugs sometimes under some circumstances do good things for people as individuals or as part of a community of people, and other drugs or even the same drugs at different times under different circumstances are harmful to the people who are involved with them or to the people around them. So making law and making policy about drugs is not so simple. There is no doubt that drugs can be a source of harm to people and those around them, but there is also no doubt that other or even the same drugs can also be a source of good. The problem in particular has been to determine which drugs at what times and under what circumstances need to be controlled or regulated to eliminate or at least minimize the negative outcomes and at the same time which drugs could or should be more openly available to maximize the positive outcomes (cf. Brownstein 2013). Considering this dilemma and focusing on the negative outcomes, Avram Goldstein wrote:

The misery suffered by addicts and their families is enormous. The costs to society—to all of us—are measured as loss of productivity, additional needs for medical care, dangers of drug-induced behaviors, destruction of family life, corruption of children, and burden on the criminal justice system. If we set aside

political bombast, media sensationalism, and ill-informed calls for quick fixes, we can try—calmly and dispassionately—to examine what science can teach us about addictive drugs and addictive behavior. That requires a thorough analysis, drug by drug, of how each one acts and what harm each does to users and to society. (Goldstein 2001:13)

The point is that to appreciate and benefit from the good that drugs can do for society and for individuals while at the same time managing the harms that drugs can do requires a lot of knowledge about drugs and then careful thought, analysis, and planning about how to appropriately allow and limit access to which drugs, when, by whom, and for what.

Complicating the problem of determining how best to deal with the mixed blessings and dangers of living with drugs in society is the fact that drugs have always been and always will continue to be part of our social experience. Across time and space drugs have been omnipresent in all societies. Late in the nineteenth century, while writing the rules for sociological method, Emile Durkheim argued that as a social phenomenon crime is normal in the sense that it “is present not only in the majority of societies of one particular species but in all societies of all types” (Durkheim 1938:65). That is not to say that the commission of a criminal act by an individual is necessarily normal behavior, but rather that the presence of crime in society is normal and to be expected and found in any and all societies. In that sense drugs are normal in society. That does not necessarily mean that personal or collective involvement with drugs or the use of any drug at any time for any purpose is normal behavior by an individual member or group of individuals in any society. But the case can be made that the pharmacological substances we call drugs in one form or another for one purpose or another are and have been found and used throughout history in all known societies. Andrew Weil has written extensively about drugs and medicine and has argued that drugs are not only normal in society but to try to discourage their use by people living in society could make things worse rather than better. He wrote, “Like the fantasy that drugs can be made to go away, the idea that people who want drugs can be discouraged from using them is an impossible dream that gets us nowhere except in worse trouble” (1972:189).

Some drugs sometimes in some circumstances will be beneficial to individuals and their societies and some drugs sometimes in some circumstances will be harmful to individuals and their societies. But either way drugs are a normal part of society and it is inevitable that people living in any society will be involved with drugs in one way or another at one time or another in one circumstance or another. To maximize their benefit and minimize their harm to people and society the challenge will be to continue to study and learn what drugs are harmful and what drugs are beneficial to what people and their social life at what times under what circumstances in what ways. There is a lot of research that has already been done and consequently, while there is much we have yet to learn, there is much we already know about drugs and society.

Explaining and Understanding Drugs and Society

There are a lot of different ways to think about drugs and society and to understand how they are related. Over the years and in particular in the past century or so there has been a lot of research, so a lot is already known. For drugs to contribute to improving the quality of lives of people and their societies and to not diminish the quality of their lives and societies, first we need to know what we know and to have confidence in our knowledge. Then we need to understand how that knowledge informs what decisions we make and what actions we take about how, where, and when drugs can and should fit into society. But drugs present themselves to us as so many different substances and have so many different ways of interacting with our personal and social experience. So to have confidence in our knowledge and to understand the relationship between drugs and society we need to know how we know what we know about drugs, how people in society have been involved and engaged with drugs, what has been done and what might be done in different societies to maximize the benefits and minimize the harm, and to understand all of this for different drugs in different societies.

In the modern world scientific research is central to the production of knowledge in which we can have confidence. Robert Merton and Jane Moss wrote that the purpose of research is to produce “new knowledge by drawing upon past knowledge” and that the new knowledge “is of a kind that adds to general understanding of uniformities” that “adds to the intellectual capital that compromises scientific knowledge” (Merton and Moss 1985:680). In terms of drugs and society this means that knowledge from scientific research can contribute to our sociological, psychological, economic, physiological, and biochemical explanations and understanding of the place and consequences of drugs in society.

In science the process of producing new knowledge begins with theory (cf. Blumer 1969). Theory “guides the progression of scientific study by suggesting how we might explain what we do not know, thus helping us to get from one bit of established knowledge to another to advance our understanding and capacity to explain” (Brownstein 2013:9). But knowledge is never absolute, so explanations of phenomena have gaps that are filled by incomplete knowledge or untested assumptions, or even ideology. According to Hamilton, “An ideology is a system of collectively held normative and reputedly factual ideas and beliefs and attitudes advocating a particular pattern of social relationships and arrangements, and/or aimed at justifying a particular pattern of conduct, which its proponents seek to promote, realise, pursue or maintain” (Hamilton 1987:38). The danger then is that “guided by unsubstantiated beliefs, values, and attitudes ideology moves the production of knowledge in a preferred direction that can be used to justify advocacy for a favored position or policy” (Brownstein 2013:10).

The problem of ideology highlights the importance of producing knowledge in which we can have confidence. Ideally, new knowledge informs explanation and understanding and in turn guides decisions and actions toward appropriate and productive responses to personal and social negative and positive outcomes relative to drug using and involvement. Researchers who study policy making have described

the process of reaching the point of making decisions and taking actions in response to personal and social conditions and problems as a series of steps or stages going from the identification and definition of the problem, the design and development of programs, policies, and programs to address the problem, the implementation of those policies and programs, evaluation of their outcomes, and finally policy or program continuation, modification, or termination (Mayer and Greenwood 1980; Bullock et al. 1983; Portney 1986; Brownstein 1991).

Early in the twenty-first century the problem of ideology became a problem for the explanation and understanding of the relationship between drugs and society. In 2003 a conservative advocacy group in the United States asked the House Committee on Energy and Commerce to tell the National Institutes of Health to justify “about 200 approved or funded projects” because they believed those projects were “about controversial research topics” such as sexual behavior, HIV/AIDS transmission, and drug use (Kaiser 2003:758). The former director of the US National Institutes of Health (NIH) director and at the time the chief executive officer of the American Association for the Advancement of Science, Alan Leshner, responded through an editorial in *Science* in which he said, “Whenever science is attacked on ideological grounds, its integrity and usefulness are threatened” (2003:1479).

In this book experts in the field of drug research and drug policy in nations around the world write not only about what is known but about how what is known is relevant to what has been done and what can be done to find the most reasonable and responsible place for drugs in society.

Knowing about particular drugs and categories of drugs

One reason for using one drug or another is to ease pain of one sort or another. Some drugs bring relief to people suffering from physical pain while others may be used to bring relief from emotional, psychological, or even psychic pain. Acetaminophen, for example, is such an analgesic and according to the NIH “is used to relieve mild to moderate pain from headaches, muscle aches, menstrual periods, colds and sore throats, toothaches, backaches, and reactions to vaccinations (shots), and to reduce fever” (<http://www.nlm.nih.gov/medlineplus/druginfo/meds/a681004.html>, accessed May 25, 2015). Acetaminophen can have negative side effects, so in some forms it is available to people who need it by medical prescription, but in other forms it is also readily available to consumers over the counter in pharmacies and a variety of other types of retail outlets. For moderate to severe pain, oxycodone might be preferred over acetaminophen or in combination with the latter. Oxycodone is an opiate analgesic and according to the NIH the side effects of taking it can be very serious and even life threatening, so it is only available by medical prescription (<http://www.nlm.nih.gov/medlineplus/druginfo/meds/a682132.html>; accessed May 25, 2015). Heroin is a very powerful opiate analgesic but has been deemed so dangerous to users and the people around them that under the law in countries like the United States it is not available for relief of pain at all.

The point is that there are a lot of different drugs that do different things for people who use them. But drugs by their nature do things to bodies and minds and people that are not always known. So as we think about drugs in society it helps to know which drugs do what and how what they do might vary by who uses it or when they use it or how they use it. And there are so many different drugs and different forms of drugs that it is not easy to know all that we need to know. But we do need to start with what we know and consider what we need to know to make the best decisions and take the most advantageous actions. In this book there are chapters about a variety of drugs, including drugs that are openly available under the law and drugs that are not. There are chapters on prescription drugs and so-called synthetic or designer drugs. There are chapters on illicit drugs such as heroin, cocaine, and methamphetamine, and drugs that are allowable under some laws but not others, such as marijuana and alcohol.

Knowing about the place of drugs in society

Given that there are both benefits and harms that come from the relationship between drugs and society it makes sense that knowing how and where drugs fit into society is important for making good decisions and taking appropriate actions with regard to that relationship. To the extent they can be problematic, drugs can be a problem for individuals who use them, but also for their relationships with the people around them and for society itself. In that sense, in terms of drugs and society it is important to understand how and when drugs are a social problem affecting the social experience of people living in society.

To understand the place of drugs in society it is important to understand the relationship between the production, distribution, and use of licit and illicit substances in various nations with regard to social forces. Similarly it is important to understand the relationship between psychological and physiological factors and how they relate to personal and social experience with drugs. There are chapters in this book that do just that.

Knowing how to study drugs and society

The purpose of social science research is to conceptualize the experience of living with and among other people so that we can describe, understand, and explain it in a meaningful way (Kaplan 1964; Lazarsfeld and Rosenberg 1955). Depending on the specific subject to be studied, the specific questions being asked, and the way the researcher defines social reality, there are different methods of research that are and can be used by the social scientist. Essentially these include both quantitative methods and qualitative methods, the former being those that are designed to study relationships among discrete and precisely defined and measured variables and the latter being those that are designed to study commonalities among broadly conceptualized social phenomena (Ragin and Amoroso, 2011).

Researchers have successfully used both types of method to understand and explain the relationship between drugs and society. There is a long and fruitful history of qualitative studies, mostly ethnographic studies of particular drugs in particular settings, in a number of places around the world. For example, there are traditions of ethnographic drug studies in the United States in cities like Chicago, San Francisco, and New York, European cities in a number of countries including England, Denmark and the Netherlands, and cities in Australia, South America, and Asia. There is also a long and productive history of quantitative work emphasizing measuring and monitoring drug use and drug trends in different places over different periods of time, much of what has been done in the United States supported by the President's Office of National Drug Control Policy. The point is that there is a lot of good research that has been done, both quantitative and qualitative, and there are chapters in this book about that research and the methods that have been used.

Knowing and not knowing about drugs and public health and safety

While there is much yet to learn and there always will be, the long traditions of quantitative and qualitative research on drugs and society have produced considerable knowledge and understanding about the impact of drugs in society on public health and safety. In terms of public safety the question has drawn a number of researchers to study the relationship between various drugs in various circumstances and crime and criminal behavior. In terms of public health there has been considerable study of the relationship between drugs and not only their impact on the minds and bodies of individuals but their impact on the health of people living among others in social institutions such as families and social spaces such as communities.

There are chapters in this book that address questions that have been raised about the relationship between drugs and society in terms of particular drugs and relevant issues of public health and safety. They broadly consider what we know and what we need to know about how drugs relate to public health and safety and the significance of social and personal characteristics and economic and geographic contexts for understanding that relationship.

Knowing about drugs and adverse social experience

Drugs may be normal in society but, even so, some of the things that happen to people and those around them in relation to drugs being in their lives and communities are not good things. There are adverse consequences and these can be disruptive to normal and enduring social experience. This is not just limited to the individual side effects or negative consequences of using certain drugs or using any drug improperly. There are also consequences for families and children, communities, schools, businesses, and any number of other social institutions and settings.

One serious consequence of misuse or abuse of drugs in terms of social experience involves violence. There are chapters in this book that consider the relationship between drugs and violence both in terms of violent crime and also violence in interpersonal relationships, such as violence against families and children.

Knowing about drugs as an illicit enterprise

To understand, address, and respond to drugs in society it is important to consider not just drugs that exist outside of the law but both licit and illicit drugs. The issue is how drugs as psychopharmacological substances relate to society whether or not they are determined to be problematic for society by some body of people with authority to make such decisions. That said, there has been a lot of attention not only by policy-makers but also by researchers on drugs that are excluded from social life by law. In part that attention is related to the fact that how drugs end up on one side of the law or the other is itself an interesting and important question. Also, the attention is related to the fact that when certain drugs are outlawed, there need to be social relationships and cultural and social structural forms constructed in order for those drugs to be related to individual people and the people around them. And further, once they are outlawed and illicit relationships, cultures, and social structures are in place, there needs to be a way or ways for the institutions of legitimate society to respond to them.

In this book there are chapters that look at knowledge that has been generated from research around these questions. There are chapters about things like how people involved with certain drugs and the drugs they use become criminalized, the relationships and cultures and subcultures that form around drug-using communities of people, how drugs that are not legal become part of international trade and the global economy, and even how the business of drugs operates when there is no way for that business to be integrated into a legitimate economy.

Learning about how to respond to the problems of drugs in society

Whether or not particular drugs or the use of those drugs is legal, there are problems of public safety and public health to consider. Public policymakers and practitioners are by their position the people in a society who are charged with the responsibility to address those problems.

In this book there are chapters that consider that what we know and how we know matter in terms of addressing the problems of public health and safety related to drugs in society. They consider things like how we can best prevent individuals from becoming involved with drugs in ways that can be harmful to themselves or to people around them, how we can treat the problems that people who misuse or abuse drugs bring upon themselves and their families and friends, and how we can deal with people whose involvement with drugs intentionally creates situations in which others can be faced with harm from drugs.

Drugs as a Normal Part of Society

The chapters in this book do present much of what is known about drugs and society. But more importantly they explain what we know in terms of where we are, where we are heading, and where we need to be going to contribute to a world in which the inevitable and necessary relationship between drugs and society does more good than harm.

The chapters in this book are written by scholars from different generations and different parts of the world. They address questions that have been raised about the relationship between drugs and society and, in particular, drugs and public health and safety. They broadly consider what we know and what we need to know about drugs and society, how we know what we know, and how drugs relate to public health and safety. They write about how social and personal characteristics and economic and geographic contexts are important to understanding that relationship.

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Part II

The Use and Marketing of Particular Drugs in Society

Alcohol

Wide-Ranging Problems, Inadequate Responses

Norman Giesbrecht and Robin Room

Introduction

Alcohol is greatly valued, deeply integrated into social and cultural contexts, used extensively, or its consumption banned or distribution strongly controlled – depending on the era and sociocultural contexts. In many Western countries it is currently a very popular drug, with 70–80% of adults having consumed alcohol in the past year. In many countries, on the other hand, its use is uncommon, with dramatic differences between men and women in prevalence and average consumption (WHO, 2014).

The recent alcohol experience differs substantially from that with tobacco, where increasingly accessible smoking cessation programs and strengthened control initiatives have been implemented in many countries in the past decades, and prevalence of tobacco users has declined to 15–20% in many countries. In contrast, the prevalence of alcohol use is increasing, particularly in countries with low rates of use, and tends to be associated with, among other factors, an increase in average income (Schmidt et al., 2010). With some noteworthy exceptions, there are ongoing social and political pressures to increase access to alcohol. Furthermore, outside specialist circles alcohol is typically not considered a drug.

Nevertheless, when the range of trauma and chronic disease is taken into account the burden from alcohol is only marginally less than that associated with tobacco in many countries, and even greater in some South American countries (Lim et al., 2012). And such an accounting does not include the wide range of social harms from drinking (Klingemann & Gmel, 2001). Furthermore, the harm from alcohol is substantially greater than that from illicit drugs in most contexts, although resources devoted to prevent or manage the latter are typically far greater than for alcohol. Even when the impact of high prevalence of alcohol use is set aside, and

psychoactive substances are compared in terms of their intrinsic harmfulness, alcohol is commonly evaluated as among the most harmful of drugs – though such scientific evaluations have often proved politically unpalatable (Room, 2006; Nutt et al., 2010).

This chapter elaborates on several of these themes. The next section discusses the various use-values of alcohol, including for intoxication, socialization, meal enhancement, and others. It also provides an overview of typologies of different drinking patterns.

In the third section the range of alcohol-related problems is discussed, including harms not only to the drinker, but also to others who are victims of alcohol-related events, such as drinking and driving incidents, alcohol-related violence, or dealing with family members with chronic alcohol-related problems. This section also discusses emerging international attention to several issues, including alcohol as a carcinogen and the association between alcohol use and social determinants of health.

Societal responses to alcohol use and problems are highlighted in the fourth section. There are ongoing initiatives, programs, and policies to control the harm from alcohol. Unfortunately, many of the popular and prevalent ones are not the most effective, and those shown to be more effective are typically not that popular. This section also focuses on trends detrimental to public health – increased access to alcohol and alcohol marketing. These are complementary aspects of ongoing efforts to expand the networks of users in many contexts, increase sales, or shift brand or beverage preferences. It also notes how trade agreements tend to block or confound best public health responses rather than reduce potential harm from alcohol.

The final section addresses several challenges: how to promote a public health response in the context of easy access to alcohol and governmental interest in only modest controls; the currently marginal role of nongovernmental organizations such as heart and cancer societies in alcohol issues – in contrast to their active involvement in tobacco control and obesity reduction; and alcohol industry involvement in alcohol policy, including seeking to have a role in “prevention,” especially in low-income countries.

An underlying theme of this chapter is that the full scope of the harm from alcohol is underestimated and even ignored by governments and health agencies, although evidence has been accumulating for decades. Furthermore, with industry initiatives to promote sales in lower-income countries, many with large populations, and current high rates of consumption in others, it is expected on balance that the problems will increase in coming years. The challenge is to draw attention to this situation and find and implement nuanced responses to the situation that will reduce the harm from alcohol.

Drinking Patterns and Use-Values of Alcohol

Alcoholic beverages have many intrinsic properties that make them useful to humans. Apart from being used as a fuel and as a solvent, alcohol has several use-values when consumed (Mäkelä, 1983). There is a long history of use of alcoholic beverages as medicine, and as a nutrient – for instance, opaque beer is used for nourishment in many traditional African cultures (Nout, 2009). And, of course,

alcohol is also used as a psychoactive substance that affects mood, and as an intoxicant. Besides the inherent properties, there are also broad symbolic meanings attached to the consumption of alcohol, as in its use as a Christian sacrament, or in ceremonial toasts, or in symbolic exchanges (e.g., Bartlett, 1980). But though alcohol may be consumed for one particular use-value, its other intrinsic properties, and often some symbolic ones as well, are also in effect. In particular, its most problematic properties – its intoxicating effects and causal roles in chronic disease – often accompany the pleasure and other positive effects sought by the drinker.

At the cultural and societal level, drinking practices and the cultural position of alcohol vary greatly. In Islamic societies, at one end of the spectrum, it is forbidden outright. Even where drinking is accepted, a large proportion of adults may not be drinkers. Contrary to the ubiquity of drinking in many rich societies and in media and advertising, about half of the adults in the world today are abstainers (WHO, 2014). In some societies, alcohol use is primarily associated with intoxication, while in others drinking is common but intoxication is strongly disapproved and rare. The dimension of how much of the drinking is to intoxication is captured by WHO's "patterns of drinking score" (WHO, 2014:35).

One key dimension for describing the cultural position of drinking is thus the extent to which drinking in the society is to intoxication. Particularly where much of the drinking is to intoxication, children are often not given access to alcohol, and in many traditional societies drinking by women is also quite rare. A second dimension is the regularity of drinking (Room & Mäkelä, 2000). To what extent are drinking and heavy drinking reserved for particular social categories and circumstances, and how do they relate to the culture: as carriers of high prestige or of low? Is drinking hidden from daily and family life, entrenched within it, or not clearly differentiated from it? The dimension of regularity of use plays a substantial role in determining the overall level of alcohol consumption in the society.

Drinking customs present an intermediate level of analysis between cultures and individual patterns of drinking (Room et al., 2002). Some drinking customs are intangible, part of everyday sociability; for instance, the custom in many cultures of informal "toasting" – making a gesture or speaking some verbal formula as an invitation to drink together. Others take on, or are associated with, institutional forms: in many cultures, there are taverns or other places where people gather to drink, with recognizable spatial and architectural arrangements that are typical in the cultural setting. Three kinds of drinking custom can be described which are very widespread, but which take on diverse typical forms in different cultures: (i) the drinking group and reciprocity customs within it; (ii) communal celebrations; and (iii) the pub or on-premises drinking shop (Room, 2013a).

Alcohol-Related Problems

While the range of population-based alcohol-related problems is extensive, there are variations related to drinking levels, patterns and sociocultural dynamics of drinking – as discussed below. Alcohol is a contributing cause of over 60 diseases and

conditions, both chronic and acute. As noted by Babor et al. (2010:49), there are several major alcohol-related health conditions contributing to morbidity and mortality, including: cancers, neuropsychiatric conditions, diabetes, cardiovascular conditions, gastrointestinal conditions, infectious diseases, maternal and prenatal conditions, acute toxic effects, accidents, self-inflicted injuries, and violent incidents.

Some diseases typically require a number of years of drinking at elevated frequency and quantity in order for the condition to become evident; for other conditions, incidents of heavy episodic drinking may be the most proximal stimulus of the problem. Those who drink frequently and in large quantities are thus likely to have elevated risk of both chronic and acute problems related to alcohol consumption, compared with those who drink infrequently and low volumes per occasion.

There appear also to be health benefits from regular light consumption, for instance of a drink every second day, mainly for middle-aged adults and mainly limited to some cardiovascular diseases and type two diabetes. However, at a population level the benefits are far outweighed by the health harms (Skog, 1996; Lim et al., 2012), and there is increasing evidence that much or all of the apparent benefits reflect problems of measurement and confounding in epidemiological studies (Chikritzhs et al., 2009; Holmes et al., 2014).

While there is widespread awareness of alcoholism or alcohol dependence as a consequence of alcohol use, there is much less attention to other chronic adverse effects. But while those who qualify as alcohol dependent typically experience more health problems than do other drinkers, a substantial share of the burden also comes from other drinkers, who regularly drink quite a lot without being dependent, or who drink sporadically at risky levels. The harm to themselves of the individuals in this group is likely to be less on average per person, but because there are many more of them in a population than persons considered to be dependent on alcohol, the accumulated harm to society is greater. This is further justification, as discussed below, for population-level alcohol policies, since they have a beneficial impact not only on those dependent on alcohol, but also on those, often representing a large sector of a population, who occasionally drink to excess, and may also prevent the onset of heavy drinking.

Table 2.1 shows an estimate of the global disease burden from alcohol for the world and for regional groupings of countries on the basis of level of national income level and (among the developing countries) alcohol consumption level. It will be seen that, in terms of absolute numbers of disability-adjusted life-years (DALYs) lost, the greatest adverse effect of alcohol is in lower-mortality developing countries (i.e., middle-income countries), and in developed countries – particularly in Eastern Europe and Central Asia. As a proportion of the total disease burden, alcohol's share is highest in eastern Europe and central Asia, but also above the world average in middle- and high-income countries. Everywhere, though less in high-income countries, alcohol-related injuries are a substantial part of the alcohol burden. The importance of alcohol as a risk factor for noncommunicable diseases is illustrated by the substantial parts of the alcohol burden from cancers, cardiovascular diseases, and other noncommunicable diseases – over 20% of the alcohol burden globally. The table does not include

estimates of alcohol's substantial impact on infectious diseases, since the quantitative literature needed for this is still developing (Parry et al., 2009).

Some alcohol-related trauma and social problems may be more visible and thus draw attention of the media, policymakers and sectors of the general public. Especially in higher-income countries there has been substantial attention to alcohol-related incidents involving motor vehicles over the past half-century. In a number of such countries, a combination of policies and interventions, detection methods, public support, victims' organizations, media advocacy, and changes in vehicle and road designs have contributed to a dramatic reduction in rates of injury and death (e.g., Transportation Research Board, 2010). In other jurisdictions with greater risks inherent in road design, increase in alcohol consumption, and growing use of motor vehicles, one might expect that drinking and driving incidents, including risks to pedestrians – both sober and intoxicated, are likely to increase (WHO, 2004).

Alcohol is also involved in disruptions in the workplace, public domain, and private context. As noted in the next sections, it may be marginally less challenging to implement policies that bear on the first two domains than on the third. Both the drinker and others are often impacted by alcohol use in these contexts.

In recent years there has emerged a more systematic approach in several countries on how alcohol use negatively impacts not only the drinker but also strangers, work associates, friends, and family. These issues has been known for some time with regard to drinking and driving and impact of alcohol on maternal and prenatal conditions, as well as alcohol-related violence and public disruption. Recent and ongoing research on “harm to others” from alcohol has deepened and expanded the focus – including the impact on others from management and care of those with alcohol-related chronic disease, the impact on children and youth with a heavy-drinking family member, and estimates of costs related to social welfare, police, and health care systems (Room 2000, 2011; Room et al. 2010; Laslett et al. 2010, 2011, 2012; Dale & Livingston, 2010; Navarro et al. 2011; Giesbrecht et al. 2010). A current World Health Organization project will expand knowledge in this area to include a number of low- and middle-income countries (WHO, 2014:16).

Societal Response: Interactive Reactions, Popular Movements, Regulations and Institutional Policies

As indicated already, intoxication and recurrent heavy drinking can be problematic in many ways for those around the drinker, and societies and cultures respond in many ways in efforts to limit or prevent the problems. One level of response is informal, in terms of those around and often directly affected by the drinker (e.g., Dietze et al., 2013; Hradilova Selin et al., 2009).

In many cultures and times, there have been more collective responses to reduce problems of alcohol in the society. Islam is not the only world religion which has reacted against problematic drinking: there are strands and movements also in

Buddhism, Christianity, and other religious traditions which have taught and acted against drinking and its associated problems (Room, 2013b). In current developing societies, there have been many spontaneous grassroots movements to counter serious alcohol problems in the community, often led by local women (e.g., Room et al., 2002:205, 211, 213).

In the nineteenth century and the first half of the twentieth, there was a substantial international movement to counter alcohol problems, which became known as the temperance movement. In its grassroots form, it emerged first among working-class men in English-speaking countries (e.g., Harrison, 1971), but quickly spread in northern Europe and eventually much more widely (Tyrrell, 1991). Initially, the movement operated on a mutual-help basis, where people helped each other to keep their pledges to give up spirits or all alcoholic beverages. Operating in this fashion, the initial waves of temperance in the United States reduced alcohol consumption by one-half in the course of 10 years (Rorabaugh, 1981). Temperance movements among the disempowered, as part of consciousness- and nation-building impulses, helped to bring sweeping social change in diverse places (Sulkunen, 1990; Herd, 1985).

In later phases of the temperance era, the emphasis switched to coercive change, seeking prohibition of alcohol sales, and in fact 13 countries did have periods of prohibition in the first decades of the twentieth century (Schrader, 2010). In a dialectical response to pressure from the temperance movement, politicians and governments responded to the movement with new legislation imposing various forms of control on the alcohol market and on alcohol availability. In the state of Victoria in Australia, for instance, the official Liquor License Reduction Board bought out and closed half of the pubs – those seen as most problematic – in the first years of the twentieth century (Room, 2014). Sweden imposed the Bratt system, a strict form of alcohol control, including individual rationing, as a harm-reduction alternative to prohibiting alcohol (Frånberg, 1987). These and other initiatives in regulatory control “from above” could not have happened without the impetus of popular movements pressing for change from below.

To a greater or lesser extent in societies where temperance had been strong, succeeding generations reacted against it (e.g., Room, 2010). Particularly in Anglophone and Nordic societies, the cultural politics of alcohol issues today still reflects this reaction, often making it difficult to implement adequate societal responses to health and welfare problems from alcohol.

In the remainder of this section, we give an overview of the evidence on different strategies and tools for reducing rates of alcohol-related harm, whether by reducing or shaping drinking or by insulating the drinking from harm.

By and large, these strategies and tools are “top down,” operating through societal institutions and the professions that staff them or through government regulation and enforcement. The strategies and tools which are noted are generally chosen for discussion because there is evidence they can be effective. But many of the strategies are not widely implemented. This is where grassroots organizing constitutes a necessary piece of the puzzle. Popular support is needed to keep such strategies and tools in effect, and often political organization and pressure are needed for them to be implemented in

the first place. Affecting as it does many vested economic interests and the fabric of many people's daily life, alcohol policymaking is not simply a technocratic exercise to be implemented by experts, but a field of social conflict where action in the interest of public health and safety often requires popular attention and pressure.

There are a number of resources to inform a societal response to alcohol-related harm. Babor et al. (2010) – based on extensive review of the evaluation literature by 15 international experts – identified 11 best practices. Anderson et al. (2009a) examined 35 interventions and policies, in 9 groups in terms of evidence of effect and level of evidence. There is also a paper by Giesbrecht and colleagues (2011) and the position paper on alcohol by the Canadian Public Health Association (2011). The latter two recommend eight alcohol policy dimensions or strategies organized into two groups: population-based policies and interventions, and targeted policies and interventions.

The following text is based on the Global Strategy for Alcohol by the World Health Organization (2010), and also draws on Giesbrecht et al. (2013) and Monteiro et al. (2013) as well as the resources cited in the text below. Table 2.2, organized according to the 10 areas in World Health Organization (2010), outlines recommended alcohol policies and prevention strategies drawing on four sources (WHO 2010; Anderson et al. 2009a; Babor et al. 2010; CPHA 2011).

Leadership, awareness and commitment

Sustainable action requires strong leadership and a solid base of awareness and political will and commitment. The commitment should ideally be expressed through adequately funded comprehensive and intersectoral national policies that clarify the contributions, and division of responsibility, of the different partners involved. The policies must be based on available evidence and tailored to local circumstances, with clear objectives, strategies, and targets. The policy should be accompanied by a specific action plan and supported by effective and sustainable implementation and evaluation mechanisms. As noted above, the appropriate engagement of civil society is essential.

The following policy options and interventions are recommended in the WHO (2010) document: (a) create national or subnational strategies; (b) establish or appoint a main institution; (c) coordinate strategies with other sectors; (d) insure wide access to information about full range of alcohol-related harms; and (e) raise awareness about harm to others and among vulnerable populations.

Health services response

Health services are central to tackling harm at the individual level among those with alcohol-use disorders and other health conditions caused by harmful use of alcohol. Health services should provide prevention and treatment interventions to

Table 2.2 Summary of recommended alcohol policies and prevention strategies from four sources

<i>World Health Organization 2010</i>	<i>Anderson et al. 2009a¹</i>	<i>Babor et al. 2010²</i>	<i>Canadian Public Health Association 2011</i>
<p>1. Leadership, awareness and commitment</p> <ul style="list-style-type: none"> a. create national or subnational strategies; b. establish or appoint a main institution; c. coordinate strategies with other sectors; d. insure wide access to information about full range of alcohol-related harms; e. raise awareness about harm to others and among vulnerable populations. 			<p>Knowledge exchange and skills building</p> <p>CPHA calls on the public health community to build capacity to respond to alcohol as a public health issue by:</p> <ul style="list-style-type: none"> • creating a community of practice in the CPHA Knowledge Centre™ to support knowledge exchange; • working together to build the capacity of health workers by developing alcohol prevention/control continuing learning opportunities for both public health and other health professionals. <p>CPHA calls on post-secondary educational institutions to include comprehensive information on both the population and individual impacts of harmful patterns of alcohol use in the core curricula of their undergraduate health programs, and expand the training on alcohol issues in medicine and nursing programs, as well as graduate public health programs.</p>

¹ Only included those assessed as “1” and “2” in Table 1 according to Anderson et al. (2009a).

² Only included those with ++ or +++ for effectiveness and cross-cultural testing in Table 16. 1 according to Babor et al. (2010).

(Continued)

Table 2.2 (Continued)

<i>World Health Organization 2010</i>	<i>Anderson et al. 2009a¹</i>	<i>Babor et al. 2010²</i>	<i>Canadian Public Health Association 2011</i>
<p>2. Health service response</p> <p>a. build capacity to deliver prevention and care;</p> <p>b. support screening and brief intervention;</p> <p>c. improve capacity to detection of FASD;</p> <p>d. coordinate prevention, treatment and care;</p> <p>e. supply universal access of affordable treatment for low-SES groups;</p> <p>f. maintain system to register and monitor alcohol-attributable mortality and morbidity with reporting mechanisms;</p> <p>g. provide culturally sensitive health and social services as appropriate.</p>	<p>Brief advice:</p> <p>Cognitive behavioral therapies for alcohol dependence;</p> <p>Benzodiazepines for alcohol withdrawal;</p> <p>Glutamate inhibitors for alcohol dependence;</p> <p>Opiate antagonists for alcohol dependence</p>	<p>Brief intervention with at-risk drinkers:</p> <p>Mutual self-help attendance;</p> <p>Medical and social detoxification;</p> <p>Talk therapies</p>	<p>Increasing access to screening and brief interventions:</p> <ul style="list-style-type: none"> • increase capacity for screening and brief intervention for problem drinking in both primary health care and emergency room settings; • increase capacity for screening and counselling women of childbearing age and pregnant women according to SOGC guidelines; • ensure adequate capacity for community-based and inpatient treatment for both harmful drinking and alcohol addiction.
<p>3. Community action</p> <p>a. guarantee rapid assessments to identify gaps and priority areas;</p> <p>b. support recognition of alcohol-related harm at the local level and cost-effective responses to them;</p> <p>c. strengthen capacity at the local level;</p> <p>d. provide information about effective community-based interventions, and build capacity for their implementation;</p>	<p>Workplace policies</p>		

- e. mobilize communities to prevent selling of alcohol to under-age youth;
- f. provide community care and support for affected individuals;
- g. support community programs and policies for subpopulations at particular risk.

4. **Drinking and driving policies and countermeasures**

- a. introduce and enforce an upper limit for blood alcohol concentration, with a reduced limit for professional drivers and young or novice drivers;
- b. promote sobriety check points and random breath-testing;
- c. introduce administrative suspension of driving licenses;
- d. introduce graduated licensing for novice drivers with zero-tolerance for drink-driving;
- e. introduce using an ignition interlock, in specific contexts where affordable, to reduce drink-driving incidents;
- f. introduce mandatory driver-education, counseling and, as appropriate, treatment programs;

Introduction and/or reduction of alcohol concentration in the blood;
 Sobriety check points and unrestricted (random) breath testing;
 Restrictions on young or inexperienced drivers (e.g. lower concentration of alcohol in blood for novice drivers);
 Mandatory treatment;
 Alcohol locks

Sobriety check points;
 Random breath testing;
 Lower blood alcohol concentration (BAC) limits;
 Administrative license suspension;
 Lower BAC for young drivers;
 Graduated licensing for novice drivers

Federal government should consider:

- requesting Transport Canada to study the possibility of including alcohol ignition interlock device or the emerging technology of Driver Alcohol Detection System for Safety (DADSS) in the safety standards governing the manufacturing of road vehicles sold in Canada.

Provincial/territorial governments should consider:

- changing Motor Vehicle Acts to implement and/or increase the length of administrative sanctions (i.e., immediate roadside suspensions) for drivers whose blood alcohol level is between .05 and .08;
- requesting that public prosecutors be more severe in their recommendations to the courts regarding sentences that apply to repeat offenders;
- increasing sobriety check points and investing in building the knowledge and skills about impaired driving enforcement tactics among front-line police staff;

(Continued)

Table 2.2 (Continued)

<i>World Health Organization 2010</i>	<i>Anderson et al. 2009a¹</i>	<i>Babor et al. 2010²</i>	<i>Canadian Public Health Association 2011</i>
<p>g. encourage provision of alternative transportation, including public transport until after closing time for drinking places;</p> <p>h. conduct public awareness and information campaigns in support of policy and in order to increase the general deterrence effect;</p> <p>i. run carefully planned, high-intensity, well-executed mass media campaigns targeted at specific situations, such as holiday seasons, or audiences such as young people.</p>	<p>Government monopolies; Minimum purchase age; Outlet density; Days and hours of sale</p>	<p>Ban on sales can reduce harm but with likely negative side-effects; Minimum legal purchase age; Rationing; Government monopoly on retail sales; Hours and days restrictions; Restrictions on density of outlets; Different availability by alcohol strength</p>	<ul style="list-style-type: none"> • implementing effective social marketing and media campaigns to assist in increasing public awareness and visibility of the sobriety checkpoints; • developing and implementing strengthened graduated licensing for novice drivers in provinces/territories. Restrictions should apply to any new driver obtaining a license, where BAC must be 0.0 when driving or teaching a learner how to drive, for a period of five years after obtaining one's license; • implementing offender-pay alcohol ignition interlock programs for individuals found guilty of impaired driving.
<p>5. Availability of alcohol</p> <p>a. establish, operate and enforce an appropriate system to regulate production, wholesaling and serving of alcoholic beverages that places reasonable limitations on the distribution of alcohol and the operation of alcohol outlets in accordance with cultural norms, by the following possible measures:</p>	<p>Government monopoly on retail sales; Hours and days restrictions; Restrictions on density of outlets; Different availability by alcohol strength</p>	<p>Ban on sales can reduce harm but with likely negative side-effects; Minimum legal purchase age; Rationing; Government monopoly on retail sales; Hours and days restrictions; Restrictions on density of outlets; Different availability by alcohol strength</p>	<p>CPHA calls on provincial and territorial governments to reduce the physical availability of alcohol. Evidence-based and promising interventions include:</p> <ul style="list-style-type: none"> • undertaking a thorough review of retail outlet numbers and density, and of hours of operation for licensed establishments, with the protection of public health and public safety being a key objective of the review. There should also be a moratorium on new retail outlets and on increases in hours of operation until these reviews are completed;

- not permitting the sale of alcohol in convenience stores. Jurisdictions where such sales are already allowed should not permit further expansion of such sales;
 - maintaining the legal age for alcohol use at 19 years of age or considering increasing the legal age for alcohol use to 19 years of age in provinces/territories where it is currently 18;
 - ensuring compliance with the legal age for the purchase of alcohol with a valid piece of personal identification; for example, British Columbia is now requiring two pieces of personal identification and Nova Scotia is implementing electronic identification verification systems.
- (i) introducing, where appropriate, a licensing system on retail sales, or public health oriented government monopolies; regulating the number and location of on- and off-premise alcohol outlets; regulating days and hours of retail sales;
- (ii) regulating modes of retail sales of alcohol;
- (iii) regulating retail sales in certain places or during special events;
- (iv) establish an appropriate minimum age for purchase or consumption of alcoholic beverages and other policies to raise barriers against sales to, and consumption of alcoholic beverages by, adolescents.
6. **Marketing of alcoholic beverages**
- a. set up regulatory or co-regulatory frameworks, preferably with a legislative basis, and supported when appropriate by self-regulatory measures, for alcohol marketing by:
- (i) regulating the content and volume of marketing;
- Controlling volume of advertising;
- Legal restrictions on exposure
- CPHA calls on all three levels of government to restrict alcohol marketing and sponsorship. This can be achieved by:
- restricting alcohol advertising, promotion, and sponsorship incrementally, with the ultimate goal to be restrictions similar to those currently in place for tobacco products;

(Continued)

Table 2.2 (Continued)

<i>World Health Organization 2010</i>	<i>Anderson et al. 2009a¹</i>	<i>Babor et al. 2010²</i>	<i>Canadian Public Health Association 2011</i>
<p>(ii) regulating direct or indirect marketing in certain or all media;</p> <p>(iii) regulating sponsorship activities that promote alcoholic beverages;</p> <p>(iv) restricting or banning promotions in connection with activities targeting young people;</p> <p>b. develop by public agencies or independent bodies of effective systems of surveillance of marketing of alcohol products;</p> <p>c. set up effective administration and deterrence systems for infringements on marketing restrictions.</p>			<ul style="list-style-type: none"> • regulating all forms of alcohol marketing, for instance the use of the Internet and social media promotions and product placement; • exploring legal options for provincial/territorial restrictions on alcohol advertising, promotion, and sponsorship, including strengthening existing provincial regulations on advertising by licensed establishments (e.g., allowing advertising of drink specials and happy hours inside the venue only).
<p>7. Alcohol pricing policies</p> <p>a. establish a system for domestic taxation on alcohol accompanied by an effective enforcement system, which may take into account, as appropriate, the alcoholic content of the beverage;</p> <p>b. regularly review prices in relation to level of inflation and income;</p>	Alcohol taxes	Increase taxes to reduce alcohol consumption	<p>CPHA calls on the federal, provincial and territorial governments to take action to implement alcohol pricing strategies to reduce the burden of alcohol-related harms. The federal government should:</p> <ul style="list-style-type: none"> • adjust federal excise duties on all alcohol products to the Consumer Price Index and apply federal excise duties based on alcohol content so that taxes would increase proportionally as alcohol content increases.

- c. ban or restrict the use of direct and indirect price promotions, discount sales, sales below cost, and flat rates for unlimited drinking or other types of volume sales;
- d. establish minimum prices for alcohol where applicable;
- e. provide price incentives for nonalcoholic drinks;
- f. reduce or stop subsidies to economic operators in the area of alcohol.

Provincial/territorial governments should:

- establish a system of alcohol pricing based on the percentage of absolute alcohol in a standard drink such that the higher the alcohol content, the higher the price. This pricing system should be indexed annually to the Consumer Price Index to keep alcohol from becoming cheaper relative to other goods in the marketplace;
- establish a minimum reference price for retail sales (e.g., minimum of \$1.50 per standard unit drink) and a minimum reference price for licensed establishments (e.g., minimum of \$3.00 per standard unit drink). Reference prices should be adjusted periodically to the Consumer Price Index;
- ensure that pricing at establishments such as U-Brew and U-Vin are consistent with the retail minimum reference price;
- establish a provincial surtax on alcoholic beverages that are disproportionately consumed by youth (e.g., alcoholic beverages with high sugar content and artificial flavoring, large-volume beer containers).

(Continued)

Table 2.2 (Continued)

<i>World Health Organization 2010</i>	<i>Anderson et al. 2009a¹</i>	<i>Babor et al. 2010³</i>	<i>Canadian Public Health Association 2011</i>
<p>8. Reducing negative consequences</p> <p>a. regulate the drinking context in order to minimize violence and disruptive behavior, including serving alcohol in plastic containers or shatter-proof glasses and management of alcohol-related issues at large-scale public events;</p> <p>b. enforce laws against serving to intoxication and legal liability for consequences of harm resulting from intoxication caused by the serving of alcohol;</p> <p>c. enact management policies relating to responsible serving of beverages on premises and train staff in relevant sectors in how to better prevent, identify and manage aggressive drinkers;</p> <p>d. reduce the alcoholic strength inside different beverage categories;</p> <p>e. provide necessary care or shelter for severely intoxicated people;</p> <p>f. provide consumer information about, and label alcoholic beverages to indicate, the harm related to alcohol.</p>	<p>Staff and management training to better handle aggression;</p> <p>Enhanced enforcement of on-premise laws and legal requirements</p>	<p>CPHA calls on provincial and territorial governments to enhance alcohol control systems based on preeminent public health and public safety interests by:</p> <ul style="list-style-type: none"> • maintaining present government control on the sale of alcoholic beverages; • supporting liquor authorities to take a more balanced approach between financial incentives and public health and public safety considerations. <p>CPHA calls on the provincial and territorial governments to change the drinking context by:</p> <ul style="list-style-type: none"> • adopting risk based licensing for licensed establishments; • ensuring that their alcohol regulatory authorities have appropriate capacity for adequate active enforcement compliance checks of on-premise laws, over-service and minimum age restrictions, along with strengthened and more timely sanctions for noncompliance by operators. • ensuring that their jurisdiction has an evidence-based bar safety and responsible service training program and that this training is conducted by government or third-party agencies; 	<p>CPHA calls on provincial and territorial governments to enhance alcohol control systems based on preeminent public health and public safety interests by:</p> <ul style="list-style-type: none"> • maintaining present government control on the sale of alcoholic beverages; • supporting liquor authorities to take a more balanced approach between financial incentives and public health and public safety considerations. <p>CPHA calls on the provincial and territorial governments to change the drinking context by:</p> <ul style="list-style-type: none"> • adopting risk based licensing for licensed establishments; • ensuring that their alcohol regulatory authorities have appropriate capacity for adequate active enforcement compliance checks of on-premise laws, over-service and minimum age restrictions, along with strengthened and more timely sanctions for noncompliance by operators. • ensuring that their jurisdiction has an evidence-based bar safety and responsible service training program and that this training is conducted by government or third-party agencies;

- requiring training of owners, managers, and staff as a condition of licensing/re-licensing. Frequency of re-licensing should be guided by evidenced-based best practices and risk assessment of the establishment type. In addition, there should be mandatory re-licensing for owners, managers, and staff of licensed establishments that have failed inspections and/or received notifications of regulatory violations.

9. **Reducing public health impact of illicit and informally produced alcohol**

- a. introduce a good quality control with regard to production and distribution of alcoholic beverages;
- b. regulate sales of informally produced alcohol and bringing it into the taxation system;
- c. introduce an efficient control and enforcement system, including tax stamps;
- d. develop or strengthen tracking and tracing systems for illicit alcohol;
- e. ensure necessary cooperation and exchange of relevant information on combating illicit alcohol among authorities at national and international levels;
- f. issue relevant public warnings about contaminants and other health threats from informal or illicit alcohol.

(Continued)

Table 2.2 (Continued)

<i>World Health Organization 2010</i>	<i>Anderson et al. 2009a¹</i>	<i>Babor et al. 2010²</i>	<i>Canadian Public Health Association 2011</i>
10. Monitoring and surveillance			
a. establish effective frameworks for monitoring and surveillance activities, including periodic national surveys on alcohol consumption and alcohol-related harm and a plan for exchange and dissemination of information;			CPHA calls on federal and provincial/territorial governments to:
b. establish or designate an institution or other organizational entity responsible for collecting, collating, analyzing, and disseminating available data, including publishing national reports;			<ul style="list-style-type: none">• increase their emphasis on continuing the development of a comprehensive and sustainable epidemiological surveillance system at federal/provincial/territorial levels, for major changes in access to alcohol, alcohol consumption patterns, and alcohol-related disease, injury and social outcomes and economic costs;• increase their support of alcohol research and knowledge exchange activities in order to develop, disseminate and implement evidence-based strategies to reduce alcohol-related harms.
c. define and track a common set of indicators of harmful use of alcohol and of policy responses and interventions to prevent and reduce such use;			
d. create a repository of data at the country level based on internationally agreed indicators and report data in agreed format to WHO and other relevant organizations;			
e. develop evaluation mechanisms with the collected data in order to determine the impact of policy measures, interventions, and programs put in place to reduce the harmful use of alcohol.			

individuals and families at risk of or affected by alcohol-use disorders and associated conditions. An important role of health services and health professionals is to inform societies about the public health and social consequences of harmful use of alcohol, support communities in their efforts to reduce the harmful use of alcohol, and advocate effective societal responses. Health services should reach out to, mobilize, and involve a broad range of players outside the health sector. Health services' response should be sufficiently strengthened and funded in a way that is commensurate with the magnitude of the public health problems caused by harmful use of alcohol.

The cumulative evidence from several hundred empirical studies, meta-analyses, and systematic reviews is that the use of screening, brief interventions, and referrals (SBIR) in health care settings is an effective method for reducing alcohol consumption and associated problems, particularly those with early stage or less severe alcohol dependence (Kaner, Dickinson, Beyer et al., 2009; Moyer, Finney, Swearingen et al., 2002; Ballesteros, Duffy, Querejeta et al., 2004a; Bertholet, Daepfen, Wietlisbach et al., 2005). This approach has shown evidence of effectiveness for both males and females (Ballesteros Gonzalez-Pinto, Querejeta et al., 2004b), as well as adolescents and adults (Babor et al., 2010). Chisholm, Rehm, Van Ommeren et al. (2004) conducted a meta-analysis of all high-quality published studies on these interventions and estimated a net 22% reduction in the consumption of hazardous drinkers. Rehm, Gnam, Popova et al. (2008) estimate that with 70% uptake of SBIR in general practice, there would be an annual saving of \$1.6 billion in terms of health, crime, and productivity losses in Canada. It can be concluded that the integration of SBIR into a range of primary and secondary health care settings will have a substantial public health benefit in reducing demand on health care and attendant costs (Babor & Higgins-Biddle, 2000; Johnson, Jackson, Guillaume et al., 2010). It is also important that a position paper or guidelines on SBIR be issued by relevant professional associations (such as for physicians, nurses, or psychologists), encouraging SBIR to become regular practice (Babor & Higgins-Biddle, 2000; Johnson et al., 2010).

Recommended policy options and interventions by WHO include: (a) build capacity to deliver prevention and care; (b) support screening and brief intervention; (c) improve capacity for detection of Fetal-Alcohol Spectrum Disorders; (d) coordinate prevention, treatment, and care; (e) supply universal access of affordable treatment for low socioeconomic status (SES) groups; (f) maintain systems to register and monitor alcohol-attributable mortality and morbidity with reporting mechanisms; and (g) provide culturally sensitive health and social services as appropriate.

Community action

Over the past 40 years there have been extensive local efforts to reduce alcohol-related problems and alcohol-related harm at the local level. Many have focused on youth (Giesbrecht & Bosma, 2011) or drinking and driving (Fell & Voas, 2006; Hingson et al. 1996). Community-based initiatives have demonstrated a number of positive outcomes, including, for example, increased support for restrictions on

marketing and price controls; decreases in sales to minors and reduced consumption by youth; reduction in Driving Under the Influence (DUI) arrests and fatal crashes; and declines in violent crimes and assault injuries (Casswell et al., 1990; Room, 1990; Giesbrecht et al., 1990; Casswell, 2000; Graham & Chandler-Coutts, 2000; Holder et al., 2000; Wagenaar et al., 2000; Giesbrecht & Haydon, 2006).

Communities can be supported and empowered by governments and other stakeholders to use their local knowledge and expertise in adopting effective approaches to prevent and reduce the harmful use of alcohol by changing collective rather than individual behavior while being sensitive to cultural norms, beliefs, and value systems.

The following policy options and interventions are recommended by WHO (2010): (a) guarantee rapid assessments to identify gaps and priority areas; (b.) support recognition of alcohol-related harm at the local level and cost-effective responses to them; (c) strengthen capacity at the local level; (d) provide information about effective community-based interventions, and build capacity for their implementation; (e) mobilize communities to prevent selling of alcohol to underage youth; (f) provide community care and support for affected individuals; and (g) support community programs and policies for subpopulations at particular risk.

Drink-driving policies and countermeasures

Driving under the influence of alcohol seriously affects a person's judgment, coordination, and other motor functions. Alcohol-impaired driving is a significant public health problem that affects both the drinker and in many cases innocent parties. Alcohol-related collisions remain one of the leading sources of alcohol-related deaths and injuries internationally (e.g., Lim et al., 2012).

Nevertheless, research has identified policies and programs that may substantially reduce the impact of drinking and driving on crashes, injuries, and fatalities (Shults et al., 2001). Young, novice, or newly licensed drivers are at substantially increased collision risk. It has been shown that Graduated Licenses, designed to separate young or new drivers from specific driving hazards such as driving after drinking during this learning period, are effective in reducing collision rates, including those resulting from alcohol (Wickens, Butters, Flam-Zalcman et al., 2013; Paglia-Boak, Adlaf, & Mann, 2011; Fell, Jones, Romano et al., 2011).

Research has provided strong support for setting administrative and criminal "per se" blood alcohol limits at 0.05%, since significant impairment is observed at this level, collision risk is significantly increased at this level, and setting or lowering a legal limit to this level results in significant decreases in alcohol-related collisions, injuries, and fatalities (Wickens et al., in press; Mann, 2002). There is evidence from Sweden that further lowering the limit to 0.02% results in further decreases (Norström & Laurell, 1997; Borschos, 2000) – presumably it eliminates, for instance, any uncertainty about whether there is a need to plan ahead for alternative transportation home from a dinner party. As well, the probabilities of being caught and punished quickly if driving above the level need to be substantial; sanctions

need to have a meaningful deterrent value to be effective (Mann, Stoduto, Macdonald et al., 2001). The punishment need not be severe; in fact, a greater severity of punishment may diminish certainty and celerity (Wright, 2010). Vehicle impoundment has been found to be a meaningful sanction that results in reductions in rates of drinking driving (Voas, Fell, McKnight et al., 2004).

Individuals who have been apprehended for drinking driving offenses are at very high risk for subsequent drinking driving offenses, collisions, and alcohol-related deaths (e.g., Peck, Arstein-Kerslake, & Helander, 1994; Mann, Anglin, Wilkins et al., 1993). Remedial programs based on principles of effective alcohol intervention, including screening, brief intervention, and referral to more intensive treatment where indicated, have been shown to reduce alcohol problems, recidivism, and collision risk among offenders (Mann, Anglin, Wilkins et al., 1994; Health Canada, 2004; Wells-Parker, Bangert-Drowns, McMillen et al., 1995; Flam-Zalcman, Mann, Stoduto et al., in press). Programs requiring installation of ignition interlock devices have been shown to reduce recidivism rates substantially while they are in place (Voas et al., 2004), and more recently, combining remedial and interlock programs in a mutually supportive fashion has been identified as a very promising countermeasure strategy (Voas et al., 2004; Elder, Voas, Beirness et al., 2011). Strong evidence-based interventions exist for reducing drink-driving. Strategies to reduce harm associated with drink-driving should include deterrent measures that aim to reduce the likelihood that a person will drive under the influence of alcohol, and measures that create a safer driving environment in order to reduce both the likelihood and severity of harm associated with alcohol-influenced crashes. In some countries, the number of traffic-related injuries involving intoxicated pedestrians is substantial and should be a high priority for intervention.

Several policy options and interventions are recommended by WHO (2010): (a) introduce and enforce an upper limit for blood alcohol concentration, with a reduced limit for professional drivers and young or novice drivers; (b) promote sobriety check points and random breath-testing; (c) introduce administrative suspension of driving licenses; (d) introduce graduated licensing for novice drivers with zero-tolerance for drink-driving; (e) introduce using an ignition interlock, in specific contexts where affordable, to reduce drink-driving incidents; (f) introduce mandatory driver-education, counseling, and, as appropriate, treatment programs; (g) encourage provision of alternative transportation, including public transport until after closing time for drinking places; (h) conduct public awareness and information campaigns in support of policy and in order to increase the general deterrence effect; and (i) run carefully planned, high-intensity, well-executed mass media campaigns targeted at specific situations, such as holiday seasons, or audiences such as young people.

Availability of alcohol

Physical availability is set primarily by the number of outlets and licensed establishments in a certain area as well as the hours and days when these outlets are open. Outlet density is associated with drinking levels in the local population

(Livingston, 2012). Restricting alcohol availability by limiting the number of outlets where alcohol is sold has been widely implemented in order to reduce alcohol-related harms by limiting consumption. It is well documented that a substantial increase in the number of alcohol outlets results in increases in alcohol consumption and associated harms (Livingston, 2012; Stockwell & Chikritzhs et al., 2009; Stockwell et al. 2011). Evidence points to increases in consumption and harms that can result from even minor changes in outlet density due to the gradual relaxation of liquor regulation (Babor et al., 2010). The impact of outlet density on high-risk drinking among younger drinkers is especially pronounced (Livingston, Laslett & Dietze, 2008; Popova, Giesbrecht, Bekmuradov et al., 2009).

There is a long history of research that demonstrates the positive relationship between the density of both on-premise and off-premise outlets, and alcohol-related harms such as violence and injuries, including assaults, alcohol-related crashes, and suicide (Popova et al., 2009) as well as public disturbances (Wilkinson & Livingston, 2012). Harms are especially prevalent in neighborhoods with high outlet density (Stockwell & Gruenewald, 2004; Livingston, Chikritzhs, & Room, 2007). Livingston (2008) has demonstrated that the effect of outlet density on assaults varies depending on the level of outlet density, suggesting that density limits should be set.

International evidence indicates that longer hours of sale significantly increase the amount of alcohol consumed and the rates of alcohol-related harms. Changes to late-night retail hours are particularly associated with levels of heavy drinking (Babor et al., 2010). Extended hours of sale attract a younger drinking crowd and result in higher blood alcohol content (BAC) levels for males (Chikritzhs & Stockwell, 2006). The literature indicates that acute harms were most likely to increase with the extension of hours of sale (Stockwell & Chikritzhs, 2009; Vingilis, McLeod, Studot et al., 2007).

Public health strategies that seek to regulate the commercial or public availability of alcohol through laws, policies, and programs are important ways to reduce the general level of harmful use of alcohol. Such strategies provide essential measures to prevent easy access to alcohol by vulnerable and high-risk groups. Higher commercial and public availability of alcohol can increase the social availability of alcohol and thus contribute to changing social and cultural norms that promote harmful use of alcohol. The level of regulation on the availability of alcohol will depend on local circumstances, including social, cultural, and economic contexts, but can also be limited by trade agreements, treaties, and disputes, since these tend to treat alcohol as a normal commercial commodity (Grieshaber-Otto et al., 2006). In some developing and low- and middle-income countries, informal markets are the main source of alcohol and formal controls on sale need to be complemented by actions addressing illicit or informally produced alcohol. Furthermore, restrictions on availability that are too strict may promote the development of a parallel illicit market. Secondary supply of alcohol, for example from parents or friends, needs also to be taken into consideration in measures on the availability of alcohol.

Policy options and interventions recommended by WHO (2010) include the following: (a) establish, operate, and enforce an appropriate system to regulate

production, wholesaling, and serving of alcoholic beverages that places reasonable limitations on the distribution of alcohol and the operation of alcohol outlets in accordance with cultural norms, by the following possible measures: (i) introduce, where appropriate, a licensing system on retail sales, or public health oriented government monopolies; (ii) regulate the number and location of on- and off-premise alcohol outlets; (iii) regulate days and hours of retail sales; (iv) regulate modes of retail sales of alcohol; and (v) regulate retail sales in certain places or during special events; and (b) establish an appropriate minimum age for purchase or consumption of alcoholic beverages and other policies to raise barriers against sales to, and consumption of alcoholic beverages by, adolescents.

Marketing of alcoholic beverages

Twenty years of research have shown that young people's exposure to alcohol advertising is linked to increased drinking if the young person currently drinks, and earlier initiation of drinking if the young person has not yet begun drinking (Anderson, De Bruijn, Angus et al., 2009b; Gordon, Harris, Mackintosh et al., 2011; Jernigan, Ostroff, Ross et al., 2007; Snyder, Milici, Slater et al., 2006). Other long-term studies have found that youth exposed to more alcohol advertisements drink more than youth exposed to fewer ads (Smith & Foxcroft, 2009; Stoolmiller, Wills, & McClure, 2012). Research with young adults has garnered similar results in that a greater exposure to alcohol portrayals in the media is associated with increased drinking (Engels, Hermans, van Baaren et al., 2009; Koordeman, Anschutz, Engels, 2012; Koordeman, Kuntsche, Anschutz et al., 2011). Alcohol advertising also encourages and reinforces positive attitudes about alcohol and associated drinking behaviors (British Medical Association Board of Science, 2009); especially problematic are ads featuring young women and girls who are increasingly shown as objectified and sexualized (Smith, Cukier, & Jernigan, 2014). Exposure to alcohol ads through event and team sponsorship, on TV, in movies, online, on buses, in bus shelters, on billboards and other media further reinforce positive associations with alcohol and proffer unrealistic expectations of the effects of drinking; often this will take the form of consumption in high-risk contexts (Brown & Witherspoon, 2002; van Hoof, de Jong, Fennis et al., 2009). Consensus is widespread: Canada's Alcohol Strategy (CCSA, 2007), the US Surgeon General (US Department of Health and Human Services 2007), the American Academy of Pediatrics (2010), the US Institute of Medicine (2004), Anderson et al. (2009b), and the Center on Alcohol Marketing and Youth (Jernigan, 2011) all recommend limiting exposure to alcohol advertising.

Reducing the impact of marketing, particularly on young people and adolescents, is an important consideration in reducing harmful use of alcohol. Alcohol is marketed through increasingly sophisticated advertising and promotion techniques, including linking alcohol brands to sports and cultural activities, sponsorships and product placements, and new marketing techniques such as e-mails, SMS and

podcasting, social media, and other communication techniques. The transmission of alcohol marketing messages across national borders and jurisdictions on channels such as satellite television and the Internet, and sponsorship of sports and cultural events, is emerging as a serious concern in some countries.

It is very difficult to target young adult consumers without exposing cohorts of adolescents under the legal age to the same marketing. The exposure of children and young people to appealing marketing is of concern, as is the targeting of new markets in developing and low- and middle-income countries with a current low prevalence of alcohol consumption or high abstinence rates. Both the content of alcohol marketing and the amount of exposure should be considered when considering ways of protecting young people against these marketing techniques.

The following policy options and interventions are recommended by the WHO (2010): (a) set up regulatory or co-regulatory frameworks, preferably with a legislative basis, and supported when appropriate by self-regulatory measures, for alcohol marketing by: (i) regulating the content and volume of marketing; (ii) regulating direct or indirect marketing in certain or all media; (iii) regulating sponsorship activities that promote alcoholic beverages; and (iv) restricting or banning promotions in connection with activities targeting young people; (b) development by public agencies or independent bodies of effective systems of surveillance of marketing of alcohol products; and (c) set up effective administration and deterrence systems for infringements of marketing restrictions.

Pricing policies

Although there are important differences, alcohol is like many other products in that demand is inversely related to its price. This means that when the price of alcohol products increases, sales decrease if other factors such as income are kept constant. Several decades of international research show that increasing the price of alcohol through interventions such as excise taxes is one of the most effective approaches for reducing consumption and also, importantly, alcohol-related harm at the population level (Wagenaar, Salois, & Komro, 2009; Babor et al., 2010; Wagenaar, Tobler, & Komro, 2010). Pricing interventions that better target risky drinkers and risky products have been implemented in several jurisdictions in Canada and elsewhere. Two such policies include *minimum prices*, which reduce the economic availability of the least expensive alcohol often favored by risky drinkers, and *pricing on alcohol content*, which raises the price of higher-strength products and reduces the price of low-strength products to reduce overall ethanol consumption across the population (National Alcohol Strategy Working Group [NASWG], 2007; Meier, Purshouse, & Brennan, 2009; Babor et al., 2010; Stockwell, Auld, Zhao et al., 2012a; Stockwell, Zhao, Giesbrecht et al., 2012b; Stockwell, Zhao, Martin et al., 2013; Zhao, Stockwell, Martin et al., 2013). A third pricing policy, regularly adjusting alcohol prices for inflation, ensures that alcohol products do not become

cheaper relative to other goods in the marketplace. This maintains the ability of prices to protect public health and safety of the population over time (Babor et al., 2010; Thomas, 2012).

Consumers, including heavy drinkers and young people, are sensitive to changes in the price of drinks. Pricing policies can be used to reduce underage drinking, to halt progression toward drinking large amounts of alcohol and/or episodes of heavy drinking, and to influence consumers' preferences. Increasing the price of alcoholic beverages is one of the most effective interventions to reduce harmful use of alcohol. A key factor for the success of price-related policies in reducing harmful use of alcohol is an effective and efficient system for taxation matched by adequate tax collection and enforcement.

Factors such as consumer preferences and choice, changes in income, alternative sources for alcohol in the country or in the neighboring countries, and the presence or absence of other alcohol measures may influence the effectiveness of this policy option. Demand for different beverages may be affected differently. Tax increases can have different impacts on sales, depending on how they affect the price to the consumer. The existence of a substantial illicit market for alcohol complicates policy considerations on taxation in many countries. In such circumstances tax changes must be accompanied by efforts to bring the illicit and informal markets under effective government control. Increased taxation can also meet resistance from consumer groups and economic operators, and taxation policy will benefit from the support of information and awareness-building to counter such resistance.

These policy options and interventions are recommended by the WHO (2010): (a) establish a system for domestic taxation on alcohol accompanied by an effective enforcement system, which may take into account, as appropriate, the alcoholic content of the beverage; (b) regularly review prices in relation to level of inflation and income; (c) ban or restrict the use of direct and indirect price promotions, discount sales, sales below cost, and flat rates for unlimited drinking or other types of volume sales; (d) establish minimum prices for alcohol where applicable; (e) provide price incentives for non-alcoholic drinks; and (f) reduce or stop subsidies to economic operators in the area of alcohol.

Reducing the negative consequences of drinking and alcohol intoxication

This target area includes policy options and interventions that focus directly on reducing the harm from alcohol intoxication and drinking without necessarily affecting the underlying alcohol consumption. Current evidence and good practices favor the complementary use of interventions along with a broader strategy that prevents or reduces the negative consequences of drinking and alcohol intoxication. In implementing these approaches, managing the drinking environment, or informing consumers, the perception of endorsing or promoting drinking should be avoided.

Several policy options and interventions are recommended by WHO (2010): (a) regulate the drinking context in order to minimize violence and disruptive behavior, including serving alcohol in plastic containers or shatter-proof glasses and management of alcohol-related issues at large-scale public events; (b) enforce laws against serving to intoxication and legal liability for consequences of harm resulting from intoxication caused by the serving of alcohol; (c) enact management policies relating to responsible serving of beverages on premises and train staff in relevant sectors in how to better prevent, identify, and manage aggressive drinkers; (d) reduce the alcoholic strength inside different beverage categories; (e) provide necessary care or shelter for severely intoxicated people; and (f) provide consumer information about, and label alcoholic beverages to indicate, the harm related to alcohol.

Reducing the public health impact of illicit alcohol and informally produced alcohol

Consumption of illicitly or informally produced alcohol could have additional negative health consequences due to a higher ethanol content and potential contamination with toxic substances, such as methanol. It may also hamper governments' abilities to tax and control legally produced alcohol. Actions to reduce these additional negative effects should be taken according to the prevalence of illicit and/or informal alcohol consumption and the associated harm. Good scientific, technical and institutional capacity should be in place for the planning and implementation of appropriate national, regional, and international measures. Good market knowledge and insight into the composition and production of informal or illicit alcohol are also important, coupled with an appropriate legislative framework and active enforcement. These interventions should complement, not replace, other interventions to reduce harmful use of alcohol.

Production and sale of informal alcohol are ingrained in many cultures and often informally controlled. Thus control measures could be different for illicit alcohol and informally produced alcohol and should be combined with awareness raising and community mobilization. Efforts to stimulate alternative sources of income for those selling informal alcohol are also important.

Policy options and interventions recommended by WHO (2010) include: (a) introduce a good-quality control with regard to production and distribution of alcoholic beverages; (b) regulate sales of informally produced alcohol and bring it into the taxation system; (c) introduce an efficient control and enforcement system, including tax stamps; (d) develop or strengthen tracking and tracing systems for illicit alcohol; (e) ensure necessary cooperation and exchange of relevant information on combating illicit alcohol among authorities at national and international levels; and (f) issue relevant public warnings about contaminants and other health threats from informal or illicit alcohol.

Monitoring and surveillance

Data from monitoring and surveillance create the basis for the successes and appropriate delivery of the other nine policy options. Local, national, and international monitoring and surveillance are needed in order to monitor the magnitude and trends of alcohol-related harms, to strengthen advocacy, to formulate policies, and to assess the impact of interventions. Monitoring should also capture the profile of people accessing services and reasons why people most affected are not accessing prevention and treatment services. Data may be available in other sectors, and good systems for coordination, information exchange, and collaboration are necessary in order to collect the potentially broad range of information needed to have comprehensive monitoring and surveillance.

Development of sustainable national information systems using indicators, definitions, and data collection procedures compatible with WHO's global and regional information systems provides an important basis for effective evaluation of national efforts to reduce harmful use of alcohol and for monitoring trends at subregional, regional, and global levels. Systematic continual collection, collation and analysis of data, timely dissemination of information and feedback to policymakers and other stakeholders should be an integral part of implementation of any policy and intervention to reduce harmful use of alcohol. Collecting, analyzing, and disseminating information on harmful use of alcohol are resource-intensive activities.

Policy options and interventions recommended by WHO (2010) include: (a) establish effective frameworks for monitoring and surveillance activities including periodic national surveys on alcohol consumption and alcohol-related harm and a plan for exchange and dissemination of information; (b) establish or designate an institution or other organizational entity responsible for collecting, collating, analyzing, and disseminating available data, including publishing national reports; (c) define and track a common set of indicators of harmful use of alcohol and of policy responses and interventions to prevent and reduce such use; (d) create a repository of data at the country level based on internationally agreed indicators and report data in agreed format to WHO and other relevant organizations; and (e) develop evaluation mechanisms with the collected data in order to determine the impact of policy measures, interventions, and programs put in place to reduce the harmful use of alcohol.

Challenges

In most rich countries, alcohol consumption levels have stabilized in recent years, though at relatively high levels. But in many low- and middle-income countries, particularly where the national income has been rising, rates of drinking at all have increased, and along with them levels of per-capita consumption (WHO, 2014). There has been considerable consolidation in global alcohol production

(Jernigan, 2010), and, often acting through governments of high-income countries where the producers have headquarters, alcohol production interests have used international trade treaties and disputes to counter efforts by governments to impose limits on the market and marketing which aim to reduce rates of alcohol problems (Ziegler, 2009; O'Brien, 2013). Meanwhile, work by international agencies on coordinating national efforts to reduce alcohol problems is limited to a handful of staff at the World Health Organization. A Framework Convention on Alcohol Control (Room et al., 2008), or coverage of alcohol under the international drug treaties (Room, 2014), is needed, if only to counter the effects of trade agreements and disputes in weakening national responses to alcohol problems.

As the chapter has suggested, there is by now a well-developed literature to guide governments and civil society at national and subnational levels on strategies to reduce rates of alcohol problems (Babor et al., 2010). Even though the studies in this literature are primarily from high-income societies, there is by now also an increasing literature based on low- and middle-income countries (Medina-Mora et al., in press), with generally similar findings, although there is clearly a need to take into account special circumstances such as a large informal alcohol supply, outside state control.

A primary challenge, in many societies, is to develop the political will for action. The economic interests involved in alcohol production and sales are often well connected in governments, and expert in placing roadblocks in the path of changes in the interest of public health and welfare. Those adversely affected by others' drinking, who perhaps have the most to gain from such changes, are often far from the centers of power in the society. The lessons of history, as well of some contemporary examples in low- and middle-income societies (Room et al., 2002), are that popular grassroots movements, acting for those most disadvantaged by controlling free and easy availability of alcohol, may be needed for substantial change to occur.

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Global Marijuana Cultivation and Societal Place Because and In Spite of US Policy and Perception

Charles Hogan and Scott Jacques

Introduction

In countries throughout the world, marijuana, like alcohol, plays a variety of roles in local culture based on its social and legal position. The most prominent indicator of the level of social acceptability, or stigma, for marijuana hinges on how the substance is culturally and legally defined. Throughout history, governments have placed restrictions on the legal availability of various substances to appease matters of state. However, it has only been in the last century that Western democratic nations have attempted to employ effective prohibitive legislation to restrict access to recreational narcotic substances. This policy change evolved as the substances were being refined and globally distributed to suit a perceived growing demand for intoxication (Gasnier International Opium Convention 1912; United States Congress 1914). Today, as governmental organizations still seek to curb the development, cultivation, manufacture, export, and import of existing and developing drugs, these substances are enjoying an ever more blatant role in popular culture.¹ Countless contemporary musical compositions use drugs as a theme or lyrical device. In film and on popular television, more and more facets of real drug use and abuse are shown, as compared to the propaganda of the past. However, in many of these shows the costs of drug addiction and abuse displayed in real life are far worse than those imagined in the much-criticized film *Reefer Madness* (Gasnier 1936).

The United States, 100 years from the Harrison Narcotics Act and over 70 years since the Marijuana Tax Act, is at the center of a global debate about the efficacy of marijuana-related enforcement and the ethical question about outlawing these behaviors. The United States sits in a position of power in this matter today because of the litigious manner in which it enacted various pieces of national legislation

Table 3.1 Major US and international legislation related to marijuana and other controlled substances

<i>Year</i>	<i>US legislation</i>	<i>International legislation</i>
1912		Hague International Opium Convention
1914	Harrison Narcotics Act – opium and coca regulated	
1925		First International Opium Convention
1937	Marihuana Tax Act – marijuana regulated for use	
1951	Boggs Act – formal federal criminalization of marijuana	
1961		Single Convention on Narcotic Drugs (United Nations 1961)
1970	Controlled Substance Act of 1970	
1976		Opium Act of 1976 (Netherlands) – tolerance for use
1996	Prop 215 (California) – first medical state	
2001		Portugal decriminalization of all drugs
2012	Initiative 502 (Washington State), Amendment 64 (Colorado) – recreational legalization	
2013		Uruguay legalization of marijuana

based on, and then mirrored in, the international community (see Table 3.1 for a timeline). It is the present subscription to international treaties on the part of various nation-states around the world that places reform of marijuana laws, at the national and international levels, in a trepidatious holding pattern.

On the one hand, the hardline federal stance and adherence to international treaties shows the United States as a nation that is utterly intolerant to the use of marijuana. On the other, one would be hard pressed to identify a country that has more dedicated sects or populations devoted to the integration of marijuana into its local culture and socialization. While still illegal to possess recreationally in all but two US states,² marijuana is glaringly visible in virtually all aspects of popular US culture. Movies, music, and even network television broadcasts showcase the place of marijuana in US society. Instead of showing a cautionary tale of a perverter of chaste, marijuana is shown as a complement to socialization in much the same way as alcohol, for better or worse. Marijuana smoking is glorified in all manner of popular music, as well as in cinema. It is this disjunction between the legal and cultural status of marijuana in the United States that sets the stage for a global review.

What follows in this chapter will be a review of the legal and cultural path that marijuana has taken through the twentieth century and into the twenty-first. From the ripple effect of early US criminalization, the start of global marijuana prohibition will begin to unfold under the influence of Americanized international policymaking. The final section of this chapter will attempt to offer a snapshot, as blurry as it may be, of the integration of marijuana in US and international culture, legal definitions, and ethical policymaking going on today. By reviewing this issue in a legal, cultural, and historical context it is hoped that the reader will be able to understand what makes, for instance, a small country in South America break from all other United Nations members and create the first national sponsored and monitored marijuana market (Nelson 2013a), a lifelong narcotics officer question what purpose his professional life has fulfilled (Jarecki 2012), or the twelfth-longest tenured US Senator, John McCain, change his mind about the benefits of regulation versus criminalization (Nelson 2013b). This chapter is intended to offer a realist view of the nature and effects on society and the cultural assimilation of a substance because of, and in spite of, legal restrictions. Where does it come from? Who uses it and why? How did we get here? And possibly, describe what the place of marijuana is in the United States, and the rest of the world, moving forward.

Marijuana in the United States – Pre-1937

During the time preceding its effective federal prohibition in the United States by the Marijuana Tax Act of 1937, the use of marijuana as a recreational intoxicant had been limited to large and border cities that had among them significant immigrant populations with a history of using recreationally and/or medicinally (Caulkins, Hawken, Kilmer, & Kleiman 2012). It was common to find marijuana-using groups centered around opium parlors, as marijuana had been used in various ways by the Chinese for thousands of years, and in southwestern towns near Mexico, as individuals in these cultures had a history of incorporating marijuana into their society with recreational and medicinal applications (Caulkins et al. 2012). With the exception of such isolated pockets of use, the most common contact that the average American had with marijuana was not in fact with marijuana, but with its non-intoxicating cousin, hemp.

Other societal staples faced similar policy pressure in the early part of the twentieth century. While the temperance push for the ban on alcohol was not a new movement by the early 1900s in the United States, what was new was the effectiveness of regulations of opium- and coca-based products by the passage of the Harrison Narcotics Act (United States Congress 1914), the US complement to the International Opium Convention of 1912. The crux of the Harrison Act was to control the amount and potency of these products. It also aimed to ensure that the continued presence of these narcotics in US culture was rooted in medical applications and not in fostering addiction (United States Congress 1914). A similar medical exception to use was included as a provision in federal legislation that briefly halted the sale,

manufacture, and distribution across state lines of all intoxicating liquors in the United States (United States Congress 1919).

Unlike with harder drugs, such as cocaine and heroin, alcohol had become so transfixed within US culture that its prohibition was nothing of the sort. Instead of reducing alcoholism and related social harm, the prohibition of alcohol allowed organized criminal enterprises to cement their place in the US black market, and through selective enforcement made outlaws from otherwise hardworking, tax-paying individuals seeking their drink. The rampant corruption, public resistance, and systematic non-compliance created a noxious societal cancer that was far and away worse than the demon rum itself (Kyvig 2000). By making the commodity more valuable to sell illicitly, those that sought their drink had to do so from a more criminal element and at a higher cost. An additional problem associated with a high demand for an illicit product is that those that seek profit do so with little regard to consumer safety and industry standards (Kyvig 2000). Instead of being made in a licensed distillery, the new brew was concocted in bathtubs and farm kettles, to be tested on goats or not tested at all.³

Americans demanded back their drink, and their drink back they received. Being already prepared for the end of prohibition, Budweiser brought new legal beer to the White House in a Clydesdale-driven carriage soon after the repeal (Anheuser Busch 2014). It would seem that even those in the highest places of government could scarcely wait for the taps to flow again.⁴ After the institutional failure of alcohol prohibition the record stood at one victory (the Harrison Narcotics Act) and one failure (the 18th Amendment) for legislation concerning the personal, recreational, and medicinal use of would-be controlled substances. The trial of marijuana would be soon to follow.

Marijuana around the World before and after Criminalization

Production and export origins of marijuana in the European market

The main narrative of marijuana production and use globally before and after the formation of international treaties was for the most part of local cultivation and specified importation along established trade paths in North Africa and the Middle East (Caulkins et al. 2012).⁵ One of the characteristics of marijuana that makes it more akin to alcohol than other internationally traded drugs is the manner in which it can be produced. While certain climates are more conducive to expansive and repeatable harvests of crops, like those of North Africa and the Middle East, marijuana can be grown just about anywhere. Once grown, it can be dried and stored for months or even years. This localization of source has taken more market share in recent years due to leaps and bounds in indoor and hydroponic cultivation methods (United Nations 2013).

In spite of sweeping governmental oversight early in the twentieth century, the major trade routes for condensed products remained relatively stable. The acceptance

of marijuana use in these origin areas of Morocco and Afghanistan, combined with other factors such as geographical location and advantageous climate, created a perfect environment, both botanically and logistically, to produce and export marijuana products. Morocco, for example, is located a short distance from the mainland of Europe across the Strait of Gibraltar. This provides a viable entry point into the European market. In addition to its geographical benefits, Morocco has a climate, in the coastal areas, highly suitable to the cultivation of marijuana. That raw marijuana is condensed into products to make shipment into the European markets as efficient and nondescript as possible. However, the further into the European market the more costly the importation costs become. With the crossing of every national border, new opportunities for prohibition enforcement become an ever-increasing risk for the traffickers. Nonetheless, the supply from Morocco and Afghanistan is demanded and thus supplied (United Nations 2013).

However, this process of ever-riskier transportation across multiple national borders has aided the shift in recent decades to the localization of the source of marijuana in parts of the European market.⁶ Starting with the changes to the Opium Act of 1976, the Netherlands brought a new way of looking at marijuana production in Europe. For the most part, low-level possession and use of the substance is decriminalized (Netherlands 1976). Additionally, so-called “coffee shops” are allowed to provide small quantities of marijuana to customers with relative impunity as to the nature of the substance’s source (Netherlands 1976; Buruma 2007).

While import and export of marijuana into and out of the Netherlands is still highly illegal, the government has, over the past 30+ years, established a process by which the demand for marijuana can be met safely and in a tax-producing manner. While other countries, most notably Portugal, have experimented with taking the Dutch model a step further, the major impact on the totality of marijuana markets in Europe stemming from Dutch acceptance has been the revelation that marijuana can be grown effectively and efficiently in controlled indoor operations in almost any geographic region.⁷ This type of marijuana production and cultivation presents more immediate risk to the local grower, but with the benefit of not having to skirt international borders and thus international border enforcement of marijuana prohibition.

Marijuana in European culture – a static and ultra-fluid evolution

Just as in the United States, European artists, musicians, and other counter-culturists shirked the new regulations and obtained their cannabis (typically hash) from the same back-alley channels and dealers that had always flown under the radar of regulators and makers of international treaties. In spite of the almost universal support for the next line of international treaties, specifically the Single Convention on Narcotic Drugs in 1961 that likened marijuana cultivation and distribution to that of opium, some European nations took notice of the minimal harm caused by the use of this illegal substance. It was in these jurisdictional areas that laws began to be

scaled back in terms of their relative punitive nature compared to the harms of the marijuana-related offenses (Netherlands 1976).

This step-by-step process is one that is being mirrored in the US charge for localized laws concerning marijuana. The tolerance of the Dutch model led to the decriminalization of all drugs in Portugal, which has led to the totality of the European continent re-examining its stance on marijuana and adherence to international conventions based on past research.⁸ The major factor in the re-examination of the international status of marijuana conflicting with local demands was the changes in methods by which marijuana has been able to be produced in the past 50 years. Domestic production reduces, if not eliminates, the specter of supporting some foreign warlord or terroristic organization, and replaces it with a source of tax revenue for the government.

The major legal regulation introduced in the 1925 Convention was that marijuana-cultivating nations had to refrain from exportation to nations that had prohibited marijuana. The most paramount amendment within the 1961 Convention was that all marijuana cultivation was to be equivocally relative to opium cultivation, meaning that it could be grown under only the most stringent conditions that served an official governmental, medical, or research need. The primary difference in the cultivation of these plants is that opium remains relatively difficult to grow in most environments. This allowed locales like Afghanistan, and in recent times Mexico, to remain major sources for opium by default of geography and botany. With marijuana, however, a potential cultivator does not need a large field and specific conditions to grow a cash crop. Marijuana cultivation has been moving more indoors and into more local areas. Greenhouses can be easily regulated and maintained, with multiple harvests being collected from a relatively small geographic area. This has made the utilization of international treaties obsolete in many areas. If the marijuana being consumed by a population is cultivated, sold, and used within the borders of a single nation, what kind of authority does an international organization, with little to no local enforcement power, have to condemn and criminalize this behavior? In places like the Netherlands, Portugal, and most recently Uruguay, these sovereign nations have placed the needs and wants of their citizens over allegiance to international conventions.

In much the same way that a few nations questioned and rebelled from the rule of international treaties, two of the US states have gone against the rule of supposedly superseding federal law in the interest of clear wants from their residents.⁹ The European narrative has shown that a conglomeration of social acceptance, harm-reduction initiatives, and an evolving scientific understanding of a substance like marijuana can facilitate the reconfiguration of a legal status within a specific jurisdiction. This model for individualistic consideration on the part of sovereign nations can be implemented at this level (as in the case of Uruguay) or at a more local one (as in the case of Colorado and Washington and even in cities like Chicago and Boston that have decriminalized low-level possession in one form or another).

Until a few nations broke from the mold, the European history of marijuana was one that mirrored the United States, a conflict between a widening cultural integration

and tightening legal status. Now the direction of the individual US states concerning marijuana is one taken from the recent (past 40 years) European legal evolution of re-evaluating local priorities over international (federal) courtesy and custom. Through this process productive and progressive legislation may learn from the past.

Marijuana in the United States 1937–1970 – an age of enforcement

Adjustment to federal laws

A look at marijuana before the wave of politicized propaganda in the 1930s would show a substance used in back alleys and musicians' dressing rooms, and one that was no more societally problematic or illegal than alcohol or tobacco consumption. It was seen, or rather not seen, as a major problem in the United States because few Americans had any personal contact with substance users.

The campaign to criminalize marijuana depicted its "spreading" use as an indicator of a creeping Latino and African American influence on wholesome, small-town America (National Commission on Marihuana and Drug Abuse (NCMDA) 1972; *Public Broadcast Service* 2013). After the passage of the Marihuana Tax Act of 1937, the substance itself was now under a de facto label of an illegal type of contraband by the US government. The act required medical prescriptions of marijuana to have a tax stamp provided by the Treasury Department. Very few of these stamps were ever made or distributed.

Those that came under investigation for marijuana-related activities by federal agents and agencies could be subjected to harsh penalties in the form of thousand-dollar fines and imprisonment (NCMDA 1972). In addition to the formal punishments handed out by governmental institutions, marijuana users, distributors, and producers faced stigmatizing ostracization in their social and professional lives (NCMDA 1972). The general public believed the information told to them about high addiction rates and extreme intoxication effects, and then placed those defining characteristics upon those found to be associated with the substance (*Public Broadcast Service* 2013).

From a policy standpoint, criminalizing marijuana arguably created more problems (e.g., long prison sentences, social stigmatization, criminal organizations) than the ones supposedly solved by prohibition. The initially perceived social harm was isolated in niche and ethnic cliques that had a demand for use. There was no push by these communities to spread the use of marijuana beyond anyone that sought it out. There was no massive profit to be made, no political agenda to satisfy. There is a saying in US popular culture that is as true today as when first orated: there is no such thing as bad publicity. Ironically, it was the demonization that brought marijuana into the homes and minds of those living in Any-town America. Few, if anyone, can try a psychoactive substance if they do not know of the substance's existence or methods of use. The feverous inquisition of marijuana in the film *Reefer*

Madness (Gasnier 1936) served to pull back the curtain and show Americans a world, as skewed as it may have been, that they might have gone their whole lives without seeing. By making marijuana illegal, the US government created an avenue that non-conformists could take to rebel against society (Polk 1969). In addition, based on the disjunction between the propagandized effects of use and the actual effects of marijuana use, opinions about the governmental legitimacy related to marijuana prohibition, and other issues, continued to degrade until coming to a head with the anti-establishment movement of the 1960s (Sherman 2001).

During the 1960s, the combination of exposure through media-inflated propaganda and forbidden enticement contributed to something that marijuana markets in the United States had not experienced before: a growing demand for product (NCMDA 1972). This demand was met the same way that all demands for products are met in the United States, namely with the help of free enterprise and competitive entrepreneurialism. The suppliers for this new US marijuana appetite remained relatively the same as they had in times of less demand. Most of the marijuana consumed in the United States during the early days of prohibition and policymaking came from Mexico (Caulkins et al. 2012). Some marijuana was imported from other sources such as Canada, and, to a lesser degree, Asian and African hash found its way across an ocean.

Additionally, a small proportion was cultivated domestically as farming practices and materials became more readily available (Caulkins et al. 2012). This process of population awareness, rebellion, and increased demand was mirrored in many local municipalities in the United States during the time following the federal prohibition. The migration of marijuana use from city jazz clubs, to beat poetry readings, to Main Street was facilitated and driven by the formal, ineffective prohibition of the substance (NCMDA 1972). This created an environment wherein an otherwise clean-cut youth of college age could face a decade or more in prison for the simple possession of a flowering plant. One marijuana cigarette could carry punishments greater than those faced by operators of speakeasies in the 1920s (United States Congress 1951; NCMDA 1972). Sale of that same plant material could net an individual a prison term equal to, if not longer than, that for murder (United States Congress 1951; NCMDA 1972).

For the majority of the country, these sanctions were societally palatable. That is to say that the same people made anxious and fearful by the propaganda of the past were passively accepting of harsh sanctions against the undesirables highlighted in reports of reefer heads and freak-power hippies (NCMDA 1972). However, a problem arose when those same middle- and upper-class citizens found themselves having to bail out their college-attending children, and then see those youths face potentially life-defining punishments alongside the “riffraff” of society (Becket & Herbert 2009).

State laws dealing with possession and lower-level sale and distribution were unfit to adjudicate those brought to the government in violation of these laws. Those laws were based on federal restrictions and punishment scales that sought to address national-level trafficking and/or international importation (NCMDA 1972). The eye test for fairness and equality was being failed in thousands of courtrooms across the United States (Becket & Herbert 2009; Caulkins et al. 2012). It was with these

mounting injustices in mind that the government commissioned a report about the state, nature, and scale of marijuana use and prohibition in the United States. The first report, "Marijuana: A Signal of Misunderstanding," was issued in March of 1972 and contained all manner of recommendations and guidelines from which to create a more balanced and just system by which to control and monitor marijuana use as opposed to continuing ineffective, inefficient, and unjust prohibition.

Summary of Findings from "Marihuana: A Signal of Misunderstanding" (1972)

Federal Recommendations

- Possession of marihuana for personal use would no longer be an offense, but marihuana possessed in public would remain contraband subject to summary seizure and forfeiture.
- Casual distribution of small amounts of marihuana for no remuneration, or insignificant remuneration not involving profit would no longer be a crime.
- A plea of marihuana intoxication shall not be a defense to any criminal act committed under its influence, nor shall proof of such intoxication constitute a negation of specific intent. (p. 152)

State Recommendations

- Cultivation, sale or distribution for profit and possession with intent to sell would remain felonies (Although we do recommend uniform penalties).
- Possession in private of marihuana for personal use would no longer be an offense.
- Distribution in private of small amounts of marihuana for no remuneration, or insignificant remuneration not involving profit would no longer be an offense.
- Possession in public of one ounce or under of marihuana would not be an offense, but the marihuana possessed in public would remain contraband subject to summary seizure and forfeiture.
- Possession in public of more than one ounce of marihuana would be a criminal offense punishable by a fine of \$100.
- Distribution in public of small amounts of marihuana for no remuneration, or insignificant remuneration not involving profit would be a criminal offense punishable by a fine of \$100.
- Public use of marihuana would be a criminal offense punishable by a fine of \$100.
- Disorderly conduct associated with public use of or intoxication by marihuana would be a misdemeanor punishable by up to 60 days in jail, a fine of \$100, or both.
- Operating a motor vehicle or dangerous instrument while under the influence of marihuana would be a misdemeanor punishable by up to one

year in jail, a fine of up to \$1,000, or both and suspension of a permit to operate such a vehicle or instrument for up to 180 days.

- A plea of marihuana intoxication shall not be a defense to any criminal act committed under its influence, nor shall proof of such intoxication constitute a negation of specific intent.
- A person would be absolutely liable in civil court for any damage to person or property which he caused while under the influence of the drug. (pp. 154–155)

A Final Comment

In this Chapter, we have carefully considered the spectrum of social and legal policy alternatives. On the basis of our findings, discussed in previous Chapters, we concluded that society should seek to discourage use, while concentrating its attention on the prevention and treatment of heavy and very heavy use. The Commission feels that the criminalization of possession of marihuana for personal use is socially self-defeating as a means of achieving this objective. We have attempted to balance individual freedom on one hand and the obligation to the state to consider the wider social good on the other. We believe our recommended scheme will permit society to exercise its control and influence in ways most useful and efficient, meanwhile reserving to the individual American his sense of privacy, his sense of individuality, and, within the context of an interacting and interdependent society, his option to select his own life styles, values, goals and opportunities.

The Commission sincerely hopes that the tone of cautious restraint sounded in the Report will be perpetuated in the debate which will follow it. For those who feel we have not proceeded far enough, we are reminded of Thomas Jefferson's advice to George Washington that 'Delay is preferable to error.' For those who argue we have gone too far, we note Roscoe Pound's statement, 'The law must be stable, but it must not stand still.'

We have carefully analyzed the interrelationship between marihuana the drug, marihuana use as a behavior, and marihuana as a social problem. Recognizing the extensive degree of misinformation about marihuana as a drug, we have tried to *demythologize* it. Viewing the use of marihuana in its wider social context, we have tried to *desymbolize* it.

Considering the range of social concerns in contemporary America, marihuana does not, in our considered judgment, rank very high. We would *deemphasize* marihuana as a problem.

The existing social and legal policy is out of proportion to the individual and social harm engendered by the use of the drug. To replace it, we have attempted to design a suitable social policy, which we believe is fair, cautious and attuned to the social realities of our time. (p. 167)

Across the board all of these recommendations were ignored, and instead the Presidential Administration of Richard Nixon pushed for, and gained, appropriations to conglomerate various federal drug enforcement operations under the new Drug Enforcement Agency (DEA), officially in operations as of July 1, 1973. Since then marijuana has remained a Schedule 1 drug. This label has pre-empted emerging research on the substance since that time.¹⁰

Marijuana and US Crime Control – Age of the DEA

With the formation of the DEA, the place of drug prohibition in US culture became much clearer. Drug use, addiction, and related commerce were all crimes for which the government of the United States was willing to commit vast resources toward policing and punishing. Listed at the top of this most-wanted list, as Schedule 1 drugs, were marijuana, heroin, LSD, and peyote. In spite of the National Commission Report, the growing size of the population of users during the preceding 20 years, and the lack of individual and societal harm of long-term or heavy use (cited in the 1972 National Report), marijuana was still labeled and publicly perceived as an inherently dangerous societal problem (Morgan & Zimmer 1997).

This mantle was not universally seen as a negative trait. In fact, the slandered reputation of marijuana actually served a purpose in some exploits of popular culture. Various movies, works of music, and literature harnessed the “evil spirit” of marijuana and used it as a creative advantage. The use of marijuana in certain contexts could convey to the audience a sense of rebellion against small-town America, an association to poor down-to-earth communities and their plight, or in the satirical context of a horror movie could serve as an example of sin and recklessness that would be soon punished by a masked man with a machete or chainsaw.

Marijuana as a gateway drug

Each step toward more interdiction efforts in policing and punishing marijuana use only caused an equal and opposite increase in the integration of marijuana into US popular culture. This cause and effect process has precipitated the necessity to define reasons for the continued steadfast governmental prohibition of marijuana. Perhaps the most flawed and dangerously influential of these characterized attributes of marijuana was that of the substance being a gateway drug to hard drug abuse.

The basis for this classification was that the need for a greater and greater high would lead those that started marijuana use to eventually become dissatisfied with the level of intoxication offered by marijuana (Golub & Johnson 1994). Those high-seekers would drift toward harder drugs, some of which have a lower level of DEA scheduling (Golub & Johnson 1994; DEA 2014). This progression can be accurate for a subset of individual drug-use narratives. What is left out of this “causal” chain is that for most users of drugs, marijuana is not their first drug (Morrall, McCaffery, & Paddock 2002). The more common progression through the early stages of mind-altering substance

use is one that begins with tobacco and/or alcohol. This is because those are the two most commonly used and widely available substances that bear some form of governmental restriction (Morral et al. 2002). Recent re-examinations of this process have also placed caffeine at the forefront of substance use instigation (Reissig, Strain, & Griffiths 2009).

The other, and possibly more scientifically sound, argument for marijuana's gateway potential concerns the association of those obtaining marijuana coming into contact with other drugs through their marijuana dealer (Hogan 2011). Drug dealers sell drugs. Oftentimes, individuals in sales occupations seek to expand their repertoire of commodities offered. In most forms of commerce the dealers are beholden to the market demands of the customers. While it is false that most marijuana users take a formal gateway path to harder drug use, it remains that most users of hard drugs also partake in marijuana.¹¹

For some marijuana dealers the lure of profits, and possible customer service considerations, drive them to offer other products for sale. Therefore, someone that might not otherwise try cocaine, for example, might be given the opportunity to acquire access to the substance through his or her marijuana dealer. The fallacy of attributing this process to marijuana is that this process is not inherent to marijuana, but this is instead a product of the legal status of marijuana being equivalent to cocaine and other hard drugs. The marijuana users are forced to obtain marijuana from an illegal source. This association characteristic could be attributed to alcohol or tobacco if these substances were placed under legal restrictions similar to marijuana. A heavy association of alcohol to heroin trafficking began to form in the latter years of alcohol prohibition (United States Justice Department 1986). This guilt by association was also attributed to marijuana in the 1980s when cocaine and marijuana importers used many of the same routes to street-level market locations in the United States and abroad (United States Justice Department 1986).

The contextualization of marijuana as the St Peter of substance use did little to disentangle the substance from its place in popular US culture. However, when contextualized within the greater market of illegal drugs, the association of marijuana to other illicit substances brings violence and social plight into viable consideration. A crude metaphor for the legal status of marijuana is akin to a review of a close football play with video replay. For a change to be made, that review must display conclusive evidence, otherwise the initial call must stand. Because the ruling on the field is that marijuana is illegal, the comparison to alcohol is not enough to overturn the present rule of law because of the association to other illegal drugs.

Push for US Legalization, Decriminalization, and Compassionate Use – 1996–2013

During the same time that the United States cracked down on virtually all forms of crime, the so-called crime-control era of the 1980s and into the 1990s, marijuana was being seen more and more in popular US culture (Gledhill-Hoyt, Lee, Strote, &

Wechsler 2000) Revolutions in filmmaking following the removal of “code standards” in the early 1970s changed the way that US films could depict controversial topics and subject matter like violence, sex, and drug use (Jacobs 2014). Instead of just being a marker of the next victim of a maniac killer, marijuana use could be shown as a way a character winds down from their day, in much the same way alcohol is often shown in neither an explicitly positive nor negative light. An example is in the 1993 movie by Robert Altman, *Short Cuts*. In one scene a character played by Chris Penn smokes the roaches¹² of old joints after a long day of cleaning pools. This character is a family man, and one can infer from the usage of the scraps of marijuana that this character must weigh the monetary cost of the marijuana with the needs of his family, while at the same time finding something positive for his own well-being in smoking just a little bit of marijuana.

Another example of the way marijuana began to be framed in the light of the 1990s is in the film *True Romance*. This movie centers on a large parcel of cocaine and all the blood and turmoil that goes along with it. Various characters are driven to homicides and other acts of violence, but perhaps the most intrinsically good character in the whole film is a marijuana user. Floyd, played by a young Brad Pitt, spends all of his scenes smoking marijuana from a bong on his couch in an apartment he shares with the local cocaine deal facilitator. His interactions with the other characters are limited to asking what is going on, and if they would like “to do a bong.” Even when the organized crime representatives track the drugs to the apartment, Floyd is passed over for violent reprisal based on his status as a harmless pothead. This neutrality projected on the marijuana user in this film displayed the evolving popular perception of marijuana users of the past and toward the harmless Floyd on the couch.

Later in the decade, the innuendos and coded terminology were all but cast aside with even more cavalier portrayals of marijuana users and marijuana markets in the United States. The 1930s saw the propaganda film *Reefer Madness*. The code-era of filmmaking all but removed marijuana from the equation of US filmmaking. That is until the late 1960s at which time movies like *Easy Rider* and *Cheech and Chong: Up in Smoke* showed the world highly stereotyped and utterly fantastic pairs of marijuana users. Even this leap forward in cultural display still relegated marijuana users to the fringes of outlaw life and the Los Angeles music scene. In 1998, two years after the passage of Proposition 215 in California,¹³ a movie was released that tore back the veil from the marijuana-using population of New York.

Half Baked can be described only as a stoner comedy. It tells the tale of three friends who must raise bail money for their kindergarten-teaching roommate who has been jailed for killing a diabetic horse with junk food on a snack run following a session of marijuana smoking. They do this by stealing research-grade marijuana from one of the main characters’ workplaces and selling it to a wide variety of customers. This film shows marijuana users in all forms: those who smoke to kick-start creative inspiration, those who have smoked since the free-love days of the 1960s, those who smoke to pass the time at work, a father who smokes while contemplating a way to bond with his son all the while his son is smoking in the next room, and

finally the grandmother of the son who smokes for medical purposes. In spite of all the slapstick and toilet humor, this film shows a truer picture of the US marijuana user than anti-drug public service announcements produced to this day. That a movie company would spend \$8,000,000 to make this film highlights a societal want for this type of story. Two kinds of characters that people want to see in popular films are (1) characters who are too outlandish to be believed – super heroes, serial killers and the like, and (2) characters who are like them – the businessman who has three kids and a mortgage, the underpaid janitor or fast-food worker who struggles all day at work, and even the pothead who sleeps on the couch to avoid the morning walk from his bed.

The journey of marijuana in popular culture was not universally scrutinized across different mediums. Film and television depictions of marijuana in the United States faced intense censorship due to the oversight in the production of these art forms, formally in the case of television and informally for films produced under the Hollywood “code” of morality (Jacobs 2014). The sphere of popular music was less influenced by systematic restrictions and boundaries of subject matter.¹⁴

Music in the United States has been able to incorporate all manner of drug and other controversial topics into the Billboard Top 100. While early incorporators used innuendo and lyrical devices to mask their marijuana references, many soon embraced the growing demand for more blunt anthems of marijuana use. Marijuana in song had been able to offer a glimpse into what the future direction of formal marijuana policy, based on public perception and popular vote, might be.

By the early 2000s, the marijuana scene in the United States had drastically changed from just a decade before. The direct association to cocaine markets of the 1980s was dissolved as emerging cultivation methods allowed domestic production to gain market share. More importantly, from 1996 to 2013, 40% of states and the District of Columbia permitted the use of marijuana in some medical capacity,¹⁵ and two states in 2012 passed measures to allow for legal recreational use of marijuana.¹⁶

During this time the tone of marijuana-inspired music shifted from the idealistic glorification of the past and toward activism trying to influence a fluid time for legislation. In a 2009 single, John Mayer asked the question, “Me in my house alone/ Who says I can’t get stoned?” With much of the inflammatory propaganda disproved and more discarded, and with legislation changing to suit the wants of local jurisdictions, individuals could now feel more free and open about asking such questions.

The manner in which marijuana was utilized as a plot device changed with the societal understanding and experience with the substance. The manner in which and the nature of songs that Americans heard about marijuana changed ahead of laws and in conjunction with opinions, injustices, victories, and defeats. It seems that marijuana activists had been quietly waiting, biding their time for the change occurring in the past decade. The public now sees a typical marijuana user as a typical American, showing homoscedasticity of demographic characteristics across most age, economic, and cultural groupings (Caulkins et al. 2012; United Nations 2013).

Concluding Remarks

Americans use drugs. Americans use legal and illegal drugs. When taking into account the history of drug interdiction in the United States, and worldwide, it is seen that governments are starting to understand that adherence to the blind faith of international treaties might not be what is best for their own legitimacy of power or the liberty and pursuit of happiness on the part of their citizens. In the past, most Americans have disapproved of the legalization of marijuana. As can be seen in the Gallup Poll presented in Figure 3.1, that is now not the case. Where will the United States, and in tow the rest of the world, take marijuana into the future? The answer is in art, informed debate, medical and scientific research, and most importantly in public opinion.

Following policy success in the Netherlands, Portugal, and California, and with wants- and needs-based policy implementation in Colorado, Washington, and Uruguay, the future place of marijuana in US and international culture is being redefined. This localized reconfiguration of marijuana's legal status is occurring at the same time that the substance is finding itself more visible in movies and on television and being heard more in popular music. Modern-day users are carving out pockets in today's litigious society that act as marijuana safe zones. While the demand for illicit marijuana will remain as long as the prohibitive laws, those governments that permit marijuana use can rely on a locally sourced, tax-producing product thanks to advancements in cultivation methods.

The need and desire to curb drug-use behavior can be seen as honorable and stemming from the patriarchal responsibility that our governments take for every citizen. The result of using the criminal justice system to accomplish this task has proven to be steeped in problems. Prison populations in the United States, and around the world, for drug-related offenders continue to grow exponentially while

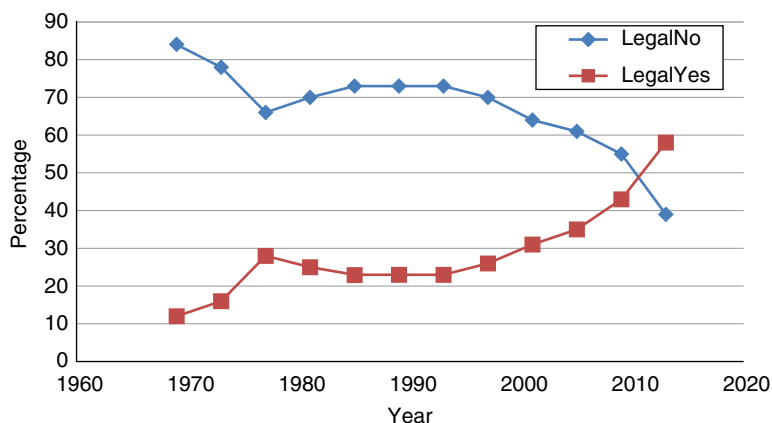


Figure 3.1 Gallup poll for legalization of Marijuana in America. Sources: Swift (2013), “For first time, Americans favor legalization marijuana”; United States Congress (1937), Marihuana Tax Act of 1937; United States Congress (1970), Controlled Substance Act of 1970

resources for prohibition are becoming more and more scarce and in competition with institutions such as schools and healthcare.

The decision to prohibit marijuana use and related activities is not something that necessarily should be made at the international level, or even at the national level. Today's marijuana markets could be, in the absence of national and international laws, centered around localized wants and supplies meeting the needs and demand of a specific population. Marijuana use is not something that should be advocated or advertised any more than alcohol use, but as said by Barack Obama in a recent interview when asked about the comparison of marijuana to alcohol, he responded that, "I don't think it is more dangerous than alcohol" (Remnick 2014). It is the duty of democratic policymakers to make the laws of a particular land fair, just, and in congruence with the desires and best interests of the constituency. Marijuana has a place in almost every human culture, and thus it should be left to each culture to define marijuana as it deems fit: as a medicine, as a recreational drug, as a criminal behavior, or as a source of revenue.

Acknowledgment

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Notes

- 1 In film, television, and music marijuana develops a presence similar to the role that it plays in the culture of origin for the media. Past standard restrictions had pre-empted the use of marijuana in film and on television in the United States (Jacobs 2014).
- 2 Colorado and Washington passed voter-based initiatives in 2012 to permit personal use and distribution; other various municipalities have removed the criminal penalty for the possession of marijuana to varying degrees (Colorado General Assembly 2012; Office of the Washington Secretary of State 2012; Mack 2012; Marijuana Policy Project 2014; Sunshine 2011).
- 3 The uncertainty of quality control is an argument posed by both sides in the marijuana legalization debate. Opponents of marijuana point to pesticides and other pathogens that might be transferred on or with raw, unregulated marijuana. Proponents argue that this is a systematic problem caused by the inability to regulate any market defined as illicit.
- 4 Similar public celebrations were held in Washington and Colorado following those states' passage of marijuana legalization legislation in 2012 (Curry 2013).
- 5 Much of the European marijuana for consumption came from these two localities, specifically Morocco and Afghanistan, in the form of condensed products such as hash or oils (Caulkins et al. 2012).
- 6 This is a combination of reducing the number of opportunities for governmental interdiction at border crossings and changes to the way that some societies have redefined marijuana as a less serious social ill.
- 7 This would allow adherence to the original intentions of international treaties that made export of marijuana to locations that did not permit its use illegal, but that allowed for domestic cultivation if the independent nation saw fit to allow the use of marijuana (First International Opium Conference 1925).

- 8 In the summer of 2013, France took steps toward allowing the medical use of marijuana (Weller 2014).
- 9 Both states, Colorado and Washington, passed legalization initiatives for marijuana by popular vote during the Presidential election of 2012.
- 10 Schedule 1 substances are defined as having no accepted medical application and having a high risk of addiction (DEA 2014). At present, all FDA approved or federally funded research on marijuana must use marijuana grown for the US government at contracted facilities at the University of Mississippi (Ole Miss) in Oxford, MS. Court challenges to this requirement have been universally rejected by federal courts (Multidisciplinary Association for Psychedelic Studies 2014).
- 11 This distinction between hard and soft drugs is the foundation of the Dutch model for tolerance. While marijuana is readily available in coffee shops, hard drugs such as heroin are still only available in street markets. However, state-sponsored needle exchange programs, and other prevention measures, keep the line between hard and soft drugs defined, but show a progressive understanding as to the nature and effects of addiction and use across the spectrum of substances.
- 12 These are the small ends of joints and blunts that are oftentimes saved by users to be smoked at a later date than the majority of the marijuana.
- 13 This was the first legislation to allow marijuana to be legally used for medical purposes (California Office of the Secretary of State 1996), although it was several years after the passage of this proposition that the marijuana markets in California began to achieve commercial and community legitimacy.
- 14 Ironically enough, the early 1990s were when restrictions began to emerge as to what could be played over open radio (Cole 2010). These restrictions did little to curb the content of the music being produced but changed the way in which US music was censored once created.
- 15 California (1996), Alaska, Oregon, Washington (1998), Maine (1999), Colorado, Nevada, Hawaii (2000), Montana, Vermont (2004), Rhode Island (2006), New Mexico (2007), Michigan (2008), Arizona, New Jersey, Washington DC (2010), Delaware (2011), Connecticut, Massachusetts (2012), Illinois, New Hampshire (2013). (Medical Marijuana ProCon.org 2014)
- 16 Colorado and Washington passed popular-vote-based measures to allow adults to produce, distribute, possess, and use marijuana within state guidelines (most notably the necessity of eliminating the distribution of Colorado-grown marijuana outside of the state (Ingold & Gorski 2013).

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Heroin and Other Opiates

Timothy W. Kinlock and Michael S. Gordon

Introduction

The use of substances involving opium, its derivatives, and synthetics have contributed to substantial benefits as well as considerable harm for both individuals and societies throughout the world for many years. Because the use of opiates has a long history, and because social, legal, medical, and political factors, as well as changes in attitude, have contributed to policy, changes in drug use, and the characteristics of users in different nations, it is useful to discuss the individual and social benefits and problems associated with opiates within an historical framework (Fernandez and Libby, 2011; Inciardi, 2008; Musto, 1999). Furthermore, by comparing present and past policies, present policymakers may learn from historical examples.

To understand the context in which the above topics are discussed, it is important to define opiates. For purposes of this chapter, opiates include substances directly derived from the opium poppy (opium); drugs derived from opium itself (morphine, codeine); substances processed from morphine (heroin) and codeine (hydrocodone, oxycodone); as well as fully synthetic substances (methadone, fentanyl) and semi-synthetic substances (buprenorphine) (Epstein, Phillips, and Preston, 2011). While there is some variation among these substances regarding potency, all have a similar pharmacological structure and action and have analgesic and sedative effects.

Chapter outline

This chapter begins by presenting the history of opiate use. Next, it describes the production, distribution, and use of heroin and other opiates across the world, including time periods, nations, and types of individuals in which the use, including problematic use of these drugs, has been disproportionately prevalent. Within this discussion of opiate use we include ways it has been incorporated into social life as well as individual and social benefits and adverse consequences associated with it. The discussion of benefits involves the value of opiates as pain relievers, whereas the material regarding problems includes health- and crime-related consequences. Finally, social responses to the use of opiates are addressed, followed by conclusions and policy implications.

History

Opium and morphine

As emphasized by Inciardi (2008), the exact beginning of the use of opium is difficult to pinpoint. There is evidence that opium was used for medical, religious, and recreational purposes for thousands of years, dating back to several prominent ancient societies: the Greeks (Epstein et al., 2011; Inciardi, 2008); the Sumerians, who referred to opium as the “plant of joy” (Fernandez and Libby, 2011); as well as the Assyrians, Babylonians, and Egyptians (Epstein et al., 2011). By the year 800, opium use had spread to India and China, and two to five centuries later, to Europe (Epstein et al., 2011). The benefits of opium for pain relief, as well as the dangers of addiction and overdose death, were well known in all societies where it was used by 1400 (Epstein et al., 2011). By the 1600s, opium smoking had become widespread in China (Epstein et al., 2011).

Among the advocates of the medicinal benefits of opium, particularly as a sedative and for the relief of pain for practically every ailment during the above-mentioned centuries, were some of the world’s most prominent physicians. These included Hippocrates and Galen in ancient Greece as well as Thomas Sydenham [known as “the English Hippocrates” and “the father of clinical medicine” (Inciardi, 2008, p. 16)], who lived in England during the 1600s. Opium arrived in North America at the time of the first permanent European settlements (Musto, 1999). Among the strongest proponents of the medical benefits of opium in the early 1700s was Sydenham’s student, Thomas Dover, who in 1709 created a medicine containing opium known as Dover’s Powder (Inciardi, 2008). This medicine arrived in the United States shortly thereafter and became one of the most widely used sources of pain relief in the United States and Europe throughout the eighteenth and nineteenth centuries (Inciardi, 2008).

The use of Dover’s Powder prompted a trend regarding the development of “patent”¹ medicines, especially in the United States (Inciardi, 2008) and in Western

Europe, particularly England (Fernandez and Libby, 2011). The existence of these medicines, which were widely advertised and sold in pharmacies, groceries, and by mail, contributed to increased use of opium products during the 1700s and early 1800s in the United States (Inciardi, 2008; Musto, 1999) and England (Fernandez and Libby, 2011). Another reason why opium use increased during that period was that in many countries, physicians did not know the causes of diseases, and opium offered comfort and quick relief from pain (Inciardi, 2008). The isolation of morphine – which was, and remains, among the most powerful pain relievers available – by Frederick Serturmer, a German pharmacist, in 1803 further facilitated the use of opium products (Inciardi, 2008). The effectiveness of morphine in relieving pain was magnified by the development of the hypodermic syringe in the 1840s, further contributing to the worldwide use of opiates (Inciardi, 2008).

Opiate use in the nineteenth century

There is consensus among researchers that the use of opiates increased over time throughout the nineteenth century in China (Fernandez and Libby, 2011; Musto, 1999; United Nations Office on Drugs and Crime (UNODC), 2012) and the United States (Fernandez and Libby, 2011; Inciardi, 2008; Kinlock, Hanlon, and Nurco, 1998; Musto, 1999). Perhaps the first nation to recognize that problematic use of opium was occurring was in 1796, when the Chinese government made opium smoking illegal (Fernandez and Libby, 2011). However, these efforts were ineffective, mainly because the British, subsequently assisted by the French, in two wars, forced the Chinese to legalize opium importation by 1858, which further contributed to increased problematic use (Fernandez and Libby, 2011; UNODC, 2012).

The “patent medicine”¹ industry apparently contributed to greater use of opium and morphine in both the United States (Inciardi, 2008; Kinlock et al., 1998; Musto, 1999) and Western Europe, particularly England (Fernandez and Libby, 2011) during the early to mid-1800s. However, opiate addiction was apparently more severe and persistent in the United States because, unlike Western European nations, the United States allowed unlimited distribution and sale of opiates until the 1890s, influenced by free enterprise and the profit motive (Musto, 1999). In contrast, in the United Kingdom, The Pharmacy Act of 1868 required that opium products could not be sold without the label “poison,” and subsequent legislation restricting the availability of opiates was enacted in the United Kingdom and other European nations by 1890 (Musto, 1999).

Other factors contributed to increased use and addiction of opiates in the United States throughout the 1800s. Perhaps the most prominent was the over-prescription of opium products by physicians, particularly to female patients (most opiate addicts in the United States during this period were women) (Inciardi, 2008). Furthermore, the practice of opium smoking was introduced by Chinese laborers and became widespread among people of all social classes by 1875.

Additionally, substantial increases occurred in expenditures for advertising “patent” medicines; in 1881, the Proprietary Medicine Manufacturers and Dealers Association was founded to advance the interests of the trade and fight against laws requiring that “patent” medicine manufacturers disclose their ingredients (Inciardi, 2008). Finally, as Musto (1999) emphasized, opiates were viewed by many Americans during the nineteenth century as helpful for pain relief, with relatively few concerns about addiction or other adverse consequences. As noted below, it was not until the 1890s that this perception began to change.

Finally, in 1898, a new opiate drug, heroin, was introduced, which would become the major opiate drug of abuse throughout the twentieth century. In 1874, British chemist Charles Wright discovered several compounds that resembled morphine – including one initially known as diacetylmorphine. Several experiments with this drug, conducted 24 years later by German pharmacist Heinrich Dreser, found that it was effective in treating coughs, chest pains, and other symptoms of tuberculosis and pneumonia. This led Dreser’s employer, Bayer Laboratories, to market the drug under a new name – heroin, German for heroic and powerful (Inciardi, 2008).

Heroin and other opiates – twentieth century and beyond

In the United States, the period encompassing the 1890s and early twentieth century was characterized by increasing views of opiate use as a moral, mental, and/or physical problem followed by greater regulation and control of these substances (Fernandez and Libby, 2011; Inciardi, 2008; Kinlock et al., 1998; Musto, 1999). Furthermore, in the United States, for many years, articles published by physicians and pharmacists on the adverse consequences of opiates were ignored (Inciardi, 2008). However, in the 1890s, reform movements, facilitated by the medical community and the media, contributed to greater citizen concern about the adverse effects of widespread opiate use and adulterated foods (Musto, 1999). Moreover, in the United States, perhaps the most convincing publication that led to greater control regarding the distribution, sale, and use of opium products was Samuel H. Adams’s *The Great American Fraud*, which appeared as a series of articles in *Collier’s* in 1905–1907. It attacked the dishonest practices of the “patent” medicine industry, emphasizing that many people became addicted, and that increasing use of such products led to crime, prostitution, and other deviant behavior. This publication, along with *The Jungle* (1906) by Upton Sinclair, which noted the unscrupulous advertising and conduct of the meat packing industry, strongly contributed to the passage of the US Pure Food and Drug Act of 1906 (Inciardi, 2008; Kinlock et al., 1998). This Act required “patent” medicine manufacturers to list all ingredients and their amounts on the package. Because these manufacturers did not comply with this Act, the “patent” medicine industry subsequently went out of business (Inciardi, 2008).

As the use of heroin and other opiates increasingly became viewed as deviant in the United States from the 1890s to the 1920s, it became more associated with segments of the population identified as un-American and immoral (Fernandez and

Libby, 2011; Inciardi, 2008; Kinlock et al., 1998; Musto, 1999). All too often, certain groups were stigmatized; for example, the Chinese were considered immoral because of opium dens and opium smoking (Fernandez and Libby, 2011; Musto, 1999); morphine became associated with prostitutes, criminals, and individuals from the lower socioeconomic classes (Kinlock et al., 1998). Such social stigma and pressure caused many middle-class individuals, particularly women, to discontinue use (Fernandez and Libby, 2011; Inciardi, 2008; Kinlock et al., 1998; Musto, 1999).

The period 1906–1920 was characterized by legislation restricting the use and sale of opium products. The first such acts included a vigorous anti-opium campaign in China in 1906, which, together with subsequent drug control measures, dramatically reduced opiate use in the twentieth century (UNODC, 2012) and a law enacted in 1908 in Canada which made the use and sale of opium illegal (Musto, 1999). International conferences convened by the United States devoted to further suppressing nonmedical use of opiates occurred in 1909, 1911, and 1912, which further contributed to increasingly restrictive legislation, such as the Harrison Act of 1914 in the United States (Inciardi, 2008; Musto, 1999).

The Harrison Act was not originally intended to make the possession and sale of opiate drugs illegal, but to increase taxes and create a national registry for manufacturers and distributors of opium products. However, at the time, there was no consensus on its interpretation; specific sections of the Act allowed physicians to prescribe, dispense, or administer narcotic drugs for “legitimate medical purposes” and “in the course of professional practice” (Inciardi, 2008, p. 28). Most physicians and pharmacists interpreted this as indicating that addiction is a disease, addicts were patients, and opiates can be prescribed to addicts for relief of withdrawal symptoms. In contrast, Treasury Department officials, charged with enforcement of drug laws, viewed the Act as claiming that addicts are not patients, but criminals – they should not receive medical or pharmacological treatment but arrest and incarceration, and physicians cannot lawfully administer opiates to addicted individuals. Ultimately, a series of Supreme Court decisions (see Inciardi, 2008, p. 28) increasingly reflected the latter viewpoint, prohibiting over-the-counter sale of opiates.

These circumstances contributed to a further reduction in the number of opiate addicts in the United States, continuing a trend begun in the 1890s with increased social stigma and pressure associated with addiction along with the decline of the “patent” medicine industry (Inciardi, 2008; Kinlock et al., 1998). These developments also led to changes in the characteristics of the US opiate addict population, which was primarily made up in 1900 of law-abiding citizens, most of whom were women, who became addicted to opium or morphine as the result of medical treatment (Kinlock et al., 1998). By 1920, most opiate addicts were young men who used heroin, lived in poor urban areas, and were initiated into heroin use by criminally prone peers (Kinlock et al., 1998). The above changes also led to the rise of a profitable illegal business – trafficking of illicit opiates, primarily heroin (Fernandez and Libby, 2011; Inciardi, 2008; Kinlock et al., 1998; Musto, 1999). As Kinlock and colleagues (1998) emphasized, among the most consistent research findings with regard to illicit heroin trafficking,

since the early 1900s to the present day, has been its prominence in poverty-stricken, overcrowded urban areas where many serious social problems are heavily concentrated. As criminal justice sanctions continued as the main response to opiate use and sale in the United States, an increasing proportion of inmates in US prisons were addicted, contributing to additional problems: prison crowding; prison staff did not know how to treat or otherwise handle addicted prisoners; smuggling of opiates into prisons; and opiate use spread to non-addicted prisoners. Because of these developments, the US Public Health Service established two hospitals to provide medical and psychiatric treatment for opiate addiction in 1935 and 1938, respectively (Kinlock et al., 1998).

The 1920s also represented a period in which nations continued on more divergent paths with regard to how opiate use and users are viewed, and, in particular, what policies dominated as to how to handle opiate addiction (Brownstein, 2013). In contrast to the United States, in the United Kingdom, authors of a 1926 government report concluded that it was legitimate for physicians to prescribe morphine and heroin to addicts for the purposes of alleviating withdrawal symptoms (Brownstein, 2013). Unlike the subsequent interpretation of the US Harrison Act, which defined opiate addiction primarily as a criminal problem that resulted in penalization, not only for addicted individuals, but also for physicians who prescribed opiate drugs to them, in the United Kingdom, control of opiate drugs was entrusted to the medical profession. As a consequence, since 1926, the British policy, similar to that of most other Western European nations, Australia, New Zealand, and Canada, toward opiate addiction has emphasized medical treatment and harm reduction (Brownstein, 2013; Drucker et al., 2011). Such a policy emphasizes minimizing adverse consequences of drug use through primary, secondary, and tertiary prevention² rather than focusing on criminal justice sanctions for users and making individuals “drug-free” (Drucker et al., 2011, p. 754). Furthermore, whereas the use of heroin by prescription became illegal in the United States in 1924 (Epstein et al., 2011), heroin maintenance not only remains legal, but is currently among the major treatment modalities for heroin addiction in the United Kingdom, Switzerland, the Netherlands, Germany, Spain, and Canada (Hall and Lucke, 2010).

During the 1940s, worldwide opiate addiction decreased substantially because World War II eliminated trafficking routes (Inciardi, 2008). These routes and corresponding rates of opiate addiction had resumed by the late 1940s. In the 1950s, in the United States and the United Kingdom, heroin replaced morphine as the dominant opiate drug. Most heroin addicts in the United States were poor, urban males, who began use at earlier ages than previous cohorts. In the United States, the 1950s represented a period in which long prison sentences, social stigma, and a culture of conformity contributed to the notion that heroin addicts were dangerous and should be punished (Inciardi, 2008; Kinlock et al., 1998). However, during the mid to late 1960s, a liberal social and political climate emerged in the United States, prompted by civil rights and feminist movements, political assassinations, campus and prison riots, and the questioning of major social institutions, such as capitalism, the military, and organized religion

(Inciardi, 2008; Kinlock et al., 1998; Lilly, Cullen, and Ball, 2011). During this period, addicts were primarily viewed as “sick,” needing help, and/or victims of an unfair society, leading to the prevailing sentiment that heroin addiction be addressed through substance abuse treatment and rehabilitation. Because of these circumstances and the emergence of an epidemic of heroin use among poor urban males, Congress established federal civil commitment programs for heroin addicts under criminal justice system supervision as well as voluntary treatment programs for opiate-addicted persons, resulting in the major types of treatment offered currently: methadone maintenance and therapeutic communities,³ which are among the most common types of substance abuse treatment available in the United States, United Kingdom, Canada, Australia, New Zealand, and in Western European nations; and drug-free outpatient treatment, which is disproportionately prevalent in the United States (Hall and Lucke, 2010; Inciardi, 2008). While the availability of the above treatment modalities and law enforcement efforts, which made it more difficult for users to buy heroin, reduced the rate of heroin addiction in the United States during the early to mid-1970s (Kinlock et al., 1998), it did not stop many individuals who initially became addicted during the late 1960s and early 1970s, known as the “heroin generation” (Johnson, 2003; Kinlock et al., 1998), to relapse to problematic opiate use and to suffer its adverse health- and crime-related consequences. A 33-year follow-up of 581 members of this “heroin generation” found that 49% died; 14% were incarcerated; and 242 interviewed; of these, about half were heroin-positive by urinalysis. While methadone maintenance and other substance abuse treatment contributed to long-term remission, about 25% relapsed after 15 years of abstinence (Hser et al., 2001).

During the late 1960s, there was another heroin epidemic among American servicemen in Vietnam. Unlike what Hser et al. (2001) reported, only 1% of US military men were addicted a year after their return from Vietnam; only 12% relapsed three years afterward. Robins et al. (2010) emphasized that the substantially diverse normative and social environments experienced by servicemen in Vietnam and inner-city civilians explained both the high rate of heroin use and low relapse rates in the Vietnam veterans. These findings from the study of Vietnam veterans altered widely supported views that heroin use is always permanent and that treatment is the only way to achieve long-term recovery (Robins et al., 2010).

During the late 1970s and early 1980s, in the United States, the Iran hostage crisis increased public and political concern about the criminogenic consequences of heroin, and parent anger over adolescent drug (mainly marijuana) use contributed to the notion that society was too permissive (Lilly et al., 2011). Furthermore, in the United States, during the 1980s, a conservative social and political climate prevailed, emphasizing the view that drug use and crime result from individual deficiencies, not from social and economic inequalities (Lilly et al., 2011). Therefore, drug policies placed greater emphasis on arrest and incarceration, resulting in vast increases in prison, jail, parole, and probation populations (Brownstein, 2013; Inciardi, 2008; Lilly et al., 2011).

Current issues and interventions

There has been a move toward a more balanced approach toward drugs in the United States in recent years, with the development and dramatic increase in drug courts (Inciardi, 2008) and treatment for incarcerated individuals with opiate addiction histories, mainly therapeutic communities, but also the initiation of methadone maintenance and buprenorphine³ (Kinlock, Gordon, and Schwartz, 2011). However, current drug policy expenditures in the United States still remain greater for law enforcement than treatment and rehabilitation (Brownstein, 2013). In contrast, most Western European nations, Canada, Australia, and New Zealand have been focused on substance abuse treatment [including therapeutic communities, although mainly opioid maintenance, primarily with methadone and also buprenorphine, among the most effective treatments for opiate addiction in terms of increasing treatment retention and reducing heroin use, with methadone having some advantage over buprenorphine (UNODC, 2012)] and harm reduction, which includes needle exchange programs that have been effective in reducing HIV and hepatitis (Drucker et al., 2011; Hall and Lucke, 2010). Furthermore, China has recently and rapidly incorporated harm-reduction services, dramatically increasing the numbers of methadone maintenance treatment centers and needle exchange programs (Drucker et al., 2011).

In addition, it is crucial that effective treatment of incarcerated individuals with histories of opiate addiction continue following release to the community to minimize the very high risk of relapse due to multiple stressors, such as the need for stable housing and legitimate employment, having conflictual relationships with family members, and meeting requirements regarding criminal justice supervision (Inciardi, 2008; Kinlock et al., 2011). Developing and implementing such interventions, independent of the type of treatment involved, is a particularly challenging task. Thus, it is strongly recommended that both treatment and corrections staff be involved in planning the intervention, and differences regarding logistics and space be reconciled so treatment procedures do not interfere with security or other ongoing procedures at the jail or prison (Gordon, Kinlock, and Miller, 2011; Kinlock et al., 2011).

Finally, an emerging treatment for opiate addiction found effective in reducing opiate use for community corrections populations in the United States (Cornish et al., 2012) and for Russian heroin-dependent individuals (Krupitsky, Zvartau, and Woody, 2010) is long-acting, injectable naltrexone (VIVITROL®). Results from Russia are especially noteworthy given that in a nation with one of the highest rates of heroin addiction in the world, methadone and buprenorphine are not available (Krupitsky et al., 2010). Naltrexone injections block the effects of opioids for up to 30 days, and have no opioid-like effects. The current authors and other research teams are in the process of initiating long-acting, injectable naltrexone treatment with incarcerated persons with histories of opioid addiction. While such interventions are feasible and protect against overdose post-release, longer-term study is needed.

Prescription opiates

In the United States during the late 1990s, state medical boards allowed prescriptions for opiates for noncancer pain, and new pain management standards were implemented in 2000 (Manchikanti et al., 2010). These circumstances, together with the development of OxyContin in 1996, led to substantial increases in the availability, use, and abuse of prescription opiates in the United States (Inciardi, 2008; Manchikanti et al., 2010). Prescription opioid use and misuse, emergency department visits, and unintentional deaths from prescription-controlled opiates have dramatically increased in recent years in the United States (Manchikanti et al., 2010; UNODC, 2012) and Canada (UNODC, 2012). However, while there is evidence for the effectiveness of opiates for chronic noncancer pain, the situation remains unclear with respect to balancing the reduction of suffering with the potential of drug-related harm (Manchikanti et al., 2010; UNODC, 2012).

Production

Process

The process resulting in the production of heroin and other opiates originates with the cultivation of the opium poppy (Inciardi, 2008; Fernandez and Libby, 2011). Cultivation typically occurs in rural areas in the world's poorest nations (Johnson, 2003). In two regions described below as the Golden Crescent and Golden Triangle, farmers plant poppy seeds annually in the late summer, producing a mature plant three months later. The plant gradually loses the petals and a small seed pod remains, which contains a white sap, harvested by cutting several incisions in it. As the sap congeals on the pod's surface, it changes color to dark brown – this is raw opium (Inciardi, 2008). This raw opium is collected and taken to a refinery where it is converted into morphine; as Inciardi (2008) emphasized, traffickers favor transporting compact morphine bricks rather than raw opium, which is sticky and has a pungent odor. Heroin (80–99% pure) is produced in a multi-stage process by adding hydrochloric acid to morphine (Fernandez and Libby, 2011).

Geographic areas

Historically, two geographic areas have been responsible for a disproportionately high amount of opium and heroin: the Golden Triangle [a large area of Southeast Asia including Myanmar (formerly Burma), northern Thailand, and Laos] and the Golden Crescent [which encompasses much of Afghanistan, Pakistan, and Iran (Inciardi, 2008)]. During the 1960s and early 1970s, the Golden Triangle was the dominant producer of illicit opium, averaging approximately 700 metric tons annually (Inciardi, 2008). However, disputes among opium and heroin traffickers in

Southeast Asia, poorer crop yields, and stricter sanctions for opium and heroin distribution in several Southeastern Asian nations contributed to the Golden Crescent being the world's leading producer of illicit opium and heroin in the late 1970s through the mid-1980s. Most of the heroin that entered the United States, Canada, and Western Europe during this period came from Afghanistan and Pakistan. However, later in the 1980s, the Golden Triangle nations re-emerged as the world's leading area for opium and heroin.

In the twenty-first century, the world's center for opium and heroin has clearly and increasingly been in Afghanistan (Beyrer et al., 2010; UNODC, 2012). Except for when the Taliban briefly banned opium poppy cultivation in 2001, and when there was a disease of the opium poppy leading to a crop failure in 2010, Afghanistan has been responsible for most of the world's opium (UNODC, 2012). This production exceeded 4,000 tons in 2004, over 6,000 tons in 2006, and represented more than 8,000 tons in 2007 – over 90% of the opium produced worldwide (Beyrer et al., 2010). During this period, the purity of heroin increased and its price dropped (UNODC, 2012). These circumstances have contributed to dramatic increases in the rates of heroin addiction, heroin injection, and HIV infection in Central Asia and the former Soviet Union nations (Beyrer et al., 2010; UNODC, 2012).

Distribution

As emphasized by Inciardi (2008), the distribution of heroin from clandestine laboratories to other countries worldwide involves many transportation routes, couriers, and profits. Routes for trafficking involve many countries in Europe, Asia, Africa, as well as North, Central, and South America, and criminal organizations are very skilled at quickly changing routes when necessary, as in the case of arrest or assassination of traffickers (Inciardi, 2008). Heroin originating from Afghanistan is distributed to every region in the world except for Latin America; most heroin consumed in Europe comes from Afghanistan, whereas most heroin consumed in the United States originates in Columbia or Mexico (UNODC, 2012). Smuggling is done in many different ways, hidden inside as many objects as possible, as well as in live animals and people's stomachs (Inciardi, 2008). Heroin trafficking organizations commonly market their drug using brand names (Inciardi, 2008). Furthermore, once the heroin has arrived at its destination, it is diluted as many as 10 times with numerous other products – milk sugar, quinine, cleansing powder (Fernandez and Libby, 2011; Inciardi, 2008) – so when reaching the user, the heroin may be anywhere from 10% to 90% pure (Inciardi, 2008).

Sellers

Over 40 years of ethnographic and survey research on the illicit heroin trade have identified a hierarchical structure of drug sellers (Inciardi, 2008; Johnson, 2003). Additionally, as Johnson (2003) emphasized, the role structure may also be

categorized according to wholesale distributors and retail-level distributors. At the highest level of the hierarchy are upper-level distributors, who import heroin from countries where it is produced. They supervise financing, smuggling, and transport of heroin and do not see, let alone use, it. They also establish and maintain international networks of importers and wholesale distributors who work for them. At the next highest level are wholesale distributors. These individuals buy large quantities of heroin from the upper-level distributors, and typically do not use the drug. Below these wholesale dealers are retail sellers. They are responsible for both money and drugs. They regularly use heroin and/or other drugs; rarely do they advance to the level of wholesale dealer (Johnson, 2003). Retail sellers and the persons who work for them are usually paid in drugs, and are most likely to be arrested. At the lowest level of the hierarchy are persons who work for retail, or street-level, dealers in a variety of ways: as lookouts to warn their employers when rival drug dealers or the police are approaching; transporting heroin; holding the drug; advertising or “touting,” or serving as an enforcer – to beat up or kill another user or dealer in a dispute over drugs, money, or both (Johnson, 2003).

Markets

As there are different levels of drug distributors, there are two types of market for heroin. Person-specific markets are those in which people learn from their social networks to find sellers, potential buyers, and drug prices (Kinlock, 2013). These markets are common among middle-class, legitimately employed individuals, and transactions typically occur in private settings (homes, cars). In contrast, open-air drug markets operate in specific public places (streets, parks, bars) at specific times, usually in poor urban areas where many serious social problems exist (Kinlock, 2013). Johnson (2003) and Kinlock (2013) emphasized that in such markets, potential buyers have fewer obstacles to access, and sellers can increase access to customers; however, market participants are more likely to be arrested, and buying from strangers is more likely to lead to violent victimization. Furthermore, when situations arise such as disputes between dealers over territory or potential customers, failure to pay one's debts, or disagreements regarding the price, amount, and quality of drugs, homicide or assault often occurs (Johnson, 2003; Kinlock, 2013; UNODC, 2012).

Problematic use/epidemiology of addiction

Over the past decade, estimates have indicated that the highest rates of problematic use of heroin and other opiates and their adverse consequences (addiction, injection, and HIV infection) have occurred in the former Soviet Union and central Asian nations, including Afghanistan, Russia and Iran (UNODC, 2012). Beyrer (2010) reported that approximately 3% of individuals in Iran and Russia have been estimated

to be heroin users. Regarding illicit use of prescription opioids, the United States has the highest rate worldwide (about 2% of US adults are users), followed by Canada (UNODC, 2012). Furthermore, summarizing several decades of research findings, the United Nations Office on Drugs and Crime (2012) noted that unemployment is related to heroin and other illicit drug use in many nations. This represents both findings at the societal level, with nations having the greater unemployment rate having higher rates of illicit drug use, and at the individual level, with persons addicted to heroin and other illicit drugs being more likely to not have legitimate work. The UNODC report also noted that most users of illicit opiates are young urban males (ages 18–25), and emphasizes that people living in poverty are significantly more likely to use heroin and/or other illicit drugs. Also, nations in which a high degree of income inequality exists generally have high rates of crime, including illicit drug trafficking; additionally, greater levels of trafficking of heroin and other illicit drugs also contribute to problematic drug use (UNODC, 2012). In over 30 years of research that the present authors have conducted on individuals addicted to heroin and/or opiates, unemployment is typical and more prevalent among women than men (Gordon et al., 2013). Also, persons with opioid use disorders have less education and are more likely to have family members involved in problematic drug use than the general population (Gordon et al., 2013; Inciardi 2008; UNODC, 2012). Finally, because many individuals with problematic heroin use are frequently involved in criminal activity, which in most cases preceded their onset of heroin addiction, it is not surprising that incarcerated individuals are substantially more likely than the general population to have histories of heroin use disorders (Kinlock et al., 2011; UNODC, 2012).

Opiates and social life

Perhaps the main way that opiates have been incorporated into social life in practically every society throughout history is their use as primary pain relievers for any ailment. Opiates were usually the first medicine taken by those afflicted by an extremely wide range of symptoms, illnesses, and/or injuries, either on their own initiative, or prescribed by physicians. As such, they were regarded much like aspirin or Tylenol are today as being helpful in everyday life, with generally little or no concern about addiction, overdose, or other health risks (Fernandez and Libby, 2011; Inciardi, 2008; Musto, 1999).

There is evidence that opium was used for recreational purposes by the ancient Sumerians (Fernandez and Libby, 2011). In addition, opium, particularly in China, Southeast Asia, India, and in rural Thailand and Laos, has historically been the dominant substance ingested for recreational, social, spiritual (at religious services, weddings, and funerals, as also in ancient Egypt), and even sexual purposes, similar to how alcohol is consumed in many Western societies today (Ray, Kattimani, and Sharma, 2008). Only recently have these practices begun to diminish considerably, with their persistence more commonly found in remote rural areas.

Benefits

Among the most significant of benefits from opioids over the past 30 years is their effectiveness in relieving severe, persistent pain and increasing quality of life, typically in individuals with advanced cancer (Portenoy et al., 2010). For many years, morphine and, more recently, fentanyl have been used for such treatment (Portenoy et al., 2010). These drugs, particularly fentanyl, have been shown to be more effective than placebo in terms of pain relief in studies from many countries (Portenoy et al., 2010).

Furthermore, over the past 10–20 years, there has been increasing recognition of the potential benefits of opioid analgesics in the treatment of patients with diagnoses of chronic noncancer pain (Papaleontiou et al., 2010). A comprehensive review of 43 peer-reviewed articles found that opioid pain relievers effectively relieved pain, reduced physical disability, and improved sleep in patients aged 60–73 with chronic noncancer pain disorders (primarily arthritis). This is significant in that chronic noncancer pain was found to be a main cause of disability and discomfort and typically results in lack of sleep, poor immune functioning, and impairment of daily living, which, if untreated, can lead to a number of serious mental and physical disorders (Papaleontiou et al., 2010).

Finally, it needs to be emphasized what can occur when opioid drugs are not available for pain relief. Most individuals suffering from cancer and AIDS in developing countries lack access to morphine and other opioid pain relievers (Brownstein, 2013). As reported by Brownstein (2013), developing countries account for only about 6% of the world's morphine.

Adverse consequences

As Epstein et al. (2011) emphasized, adverse consequences of heroin use occurs with respect to its major routes of administration. Injection, which is the most common method of administration, can lead to HIV and hepatitis infection, particularly when injection equipment is shared and/or previously used by other heroin injectors. Other infections, including endocarditis, can also result from injection. Sniffing heroin or other opiates may cause pulmonary complications, septal perforation, and chronic sinusitis.

Among the most severe adverse consequences of opioid use disorders, particularly of heroin, is a disproportionately greater risk of mortality, particularly premature mortality, than in the general population (Inciardi, 2008). Of these causes of death, overdose is the most prevalent (UNODC, 2012). This circumstance is particularly prevalent among individuals with heroin addiction histories following release from incarceration (Binswanger et al., 2011). Furthermore, individuals with histories of heroin disorders are also at much higher risk of death than the general population for homicide and suicide and many diseases, including HIV and hepatitis infection, cancer, liver disease, cardiovascular disease, and respiratory ailments (Inciardi, 2008).

Another adverse consequence involves the criminal activity committed by individuals who regularly use heroin. Several findings on the relationship between heroin addiction and crime have been remarkably consistent across studies. First, many heroin addicts (both men and women) tend to commit illegal activity (excluding illicit drug use or possession) on a daily or near-daily basis (Gordon et al., 2013; Hall and Lucke, 2010; Inciardi, 2008). Second, and also found regardless of gender, increased frequency of heroin use multiplies existing criminal tendencies (Gordon et al., 2013; Hall and Lucke, 2010; Hser et al., 2001; Inciardi, 2008). While much of this relationship between increasing frequency of heroin use and increased frequency of crime is fueled by the need to maintain one's addiction, criminality typically was present prior to addiction, and, in many instances, prior to first use of heroin (Gordon et al., 2013; UNODC, 2012). Third, the crimes that heroin addicts commit encompass a wide range of seriousness – mainly selling illicit drugs and secondly working for a drug dealer in a variety of ways, but also include theft, vandalism, burglary, and violent crimes such as robbery, assault, and homicide. While violent crimes comprise a minority of the actual number of crimes committed, many violent acts are committed given the large numbers of offenses (Inciardi, 2008). Finally, individuals vary with regard to the type, amount, severity, and persistence of crimes committed. Whereas the crime rates of most heroin addicts decline substantially during periods of non-addiction or less frequent heroin use compared to periods of addiction, the offending of others, particularly those with comparatively early onsets of criminal activity, who are typically males, persists regardless of addiction status (Gordon et al., 2013; Hall and Lucke, 2010; Inciardi, 2008). Finally, multiple risk factors in the individual (conduct disorder, antisocial personality) and the environment (maltreatment and lack of monitoring/supervision by parents and caretakers, poverty) experienced in early childhood increase an individual's susceptibility to a variety of subsequent deviant behaviors, including illicit drug use and criminal activity (UNODC, 2012). As heroin use is typically considered more serious than other forms of illicit drug use, in view of its association with serious health risks and criminality (UNODC, 2012), individuals who are addicted to heroin usually have already been involved in alcohol intoxication, marijuana use, and use of other illicit substances prior to their onset of heroin use (Gordon et al., 2013).

Summary and Policy Implications

Opiate drugs have not been viewed at all times and in all societies as leading to crime, violence, addiction, and health problems. Rather, the perceptions of such substances and the individuals who use them vary considerably over time and place (Brownstein, 2013; Inciardi, 2008; Kinlock et al., 1998; Lilly et al., 2011; Musto, 1999). Often the nature of the social, economic, and political climate that dominates at the time determines how drug use and users are perceived, with attitudes and policies changing from one extreme to the other. We can learn from history that treating all individuals with opiate use disorders with the same intervention does

not work and leads to additional problems. For instance, in the United States during the 1920s, the overemphasis on harsher punishment for the use and distribution of heroin and other opiates strongly contributed to prison crowding, and, in turn, smuggling drugs into prisons and the spread of opiate use to prisoners who were not users. Also, correctional staff did not know how to treat, or otherwise manage, addicted prisoners. These circumstances led to the creation of hospitals for the medical and psychiatric treatment of addicted inmates. Similarly, during the 1960s, the focus changed, reflecting the notion that opiate-addicted persons were not criminals, but were sick, needing help, and/or victims of an unfair society. While this situation led to the creation of effective substance abuse treatment interventions – therapeutic communities, methadone maintenance – the view that addicts were deviants continued, partly because of increasing concern over the criminal activity, drug trafficking, and violence associated with heroin addiction (Inciardi, 2008). This circumstance, together with prison riots, parental concern about adolescent drug use, and the Iran hostage crisis all contributed to the idea that US society was becoming too permissive (Inciardi, 2008; Lilly et al., 2011). As a result, US drug policy during the 1980s and early 1990s returned to an emphasis on criminal justice sanctions, which led to another dramatic increase in the number of addicted prisoners.

More recently, however, there has been an increase in new interventions in the United States that combine sanctions with substance abuse treatment: residential treatment programs for drug-involved offenders that begin during incarceration and continue in the community; drug courts; and a variety of interventions that accompany community supervision. Furthermore, the United States is slowly adopting evidence-based, corrections-based pharmacotherapies, such as methadone maintenance and buprenorphine which are more firmly established in Australia, New Zealand, Canada, the United Kingdom, and other Western European nations. In addition, primarily in the United Kingdom, the Netherlands, and other Western European nations, and, subsequently, China, there has been greater use of drug policies that emphasize harm reduction. Unlike the view that opiate users should be punished, the goal of harm reduction is to reduce the adverse effects of addiction, through substance abuse treatment, needle exchange programs, and research and education. The United Nations Office on Drugs and Crime (2012) emphasized that, worldwide, there is increasing awareness that treatment and rehabilitation of individuals dependent upon opiates and other illicit drugs are more effective interventions than punishment.

Also, it is important to emphasize that designing and implementing effective interventions to minimize opiate addiction and its adverse health- and crime-related consequences is far from an easy task. International cooperation, which is often difficult to achieve, is urgently needed to disrupt multinational drug trafficking as well as to promote prevention and treatment initiatives (UNODC, 2012). Thus, the debate over which measure should be implemented that has dominated policy in many nations for many years – that is, treatment or sanctions, is not only simplistic but also ineffective – without both, many more individuals will be addicted, and

many more crime and adverse health conditions will occur (UNODC, 2012). In carrying out effective substance abuse treatment interventions for incarcerated individuals with histories of opiate addiction, which need to span the institution and community, collaboration between substance abuse treatment and correctional agencies, which historically have different priorities and agenda, is needed. In such efforts, it is helpful to ensure that correctional agencies understand how such programs can benefit them by reducing criminal recidivism, thus having fewer prisoners and jail inmates to manage. Furthermore, various evidence-based treatment interventions for opiate addiction, such as therapeutic communities and methadone maintenance, may have far different philosophies and goals. The debate over which is best, often advocated by proponents, needs to be minimized so as to address the question of which intervention works best for which individuals under which circumstances.

Finally, it is important to stress that opiates have immense benefits for relieving pain and suffering as well as substantial potential to cause addiction and death. On the one hand, in light of the fact that opiate drugs are urgently needed now in developing nations for individuals suffering from chronic, severe pain from many different diseases, including cancer and HIV, it is apparent that such substances are needed (Brownstein, 2013). On the other hand, although a massive influx of these same drugs has benefited thousands of individuals while, at the same time, contributing to a substantial increase in drug misuse and overdose death over the past 10–15 years, new policy directions appear necessary. The question now, as at the time the US Harrison Act was being considered, is not whether, but how, to intervene. While noting that coming up with possible answers to this question is not easy is a gross understatement, we should first make sure that we do not repeat the same mistakes over again by treating all opiate users the same and having a single intervention mandated for all.

Notes

- 1 These medicines were actually unpatented because the process of patenting a drug requires revealing all of its ingredients (Inciardi, 2008).
- 2 As described by Drucker et al. (2011), the goals of primary prevention involve reduction of the harms of drug use (e.g., HIV and hepatitis infection, addiction, overdose death) and drug policy as well as the risks of illicit drug market participation (violence, corruption). Secondary prevention intends to minimize the prevalence and severity of the above-mentioned adverse consequences through substance abuse treatment, rehabilitation, and programs such as needle exchange for drug injectors. Tertiary prevention concerns reducing collateral medical and social damage resulting from drug use, addiction, and illicit trafficking to individuals, families, and communities after drug use becomes prevalent and chronic.
- 3 In therapeutic communities, recovering individuals live together and develop and reward thinking patterns and attitudes that promote abstinence from drugs and crime and the adoption of prosocial values (Inciardi, 2008). Methadone maintenance involves the

regular use of an opioid agonist for preventing withdrawal and, together with counseling, managing opioid dependence. Methadone is orally effective, making injection unnecessary, and is longer-acting than heroin; a single dose can last 24 hours (Inciardi, 2008). Buprenorphine, a partial opiate agonist, was recently approved for the treatment of heroin addiction. Unlike methadone, it can be prescribed in a doctor's office; however, it has greater potential for diversion (Inciardi, 2008).

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Cocaine Powder and Crack Cocaine

A Changeable History?

Paul Gootenberg

Overview

Cocaine, after cannabis, is the second most widely consumed illicit drug in the world, with approximately 14 to 21 million users, and up to 1–2% of all adults in high-use areas such as North America and Western Europe (UNODC 2014). A powerful stimulant, cocaine is an alkaloid (benzoylecgonine) derived from the leaves of the Andean coca bush (*Erythroxylum coca*). It is usually taken nasally – i.e., “snorted” – and for most of its users across the world considered a recreational “party” drug. Today, the global illicit economies of South American cocaine generate estimated annual revenues of \$84 billion from the sale of some 800 annual metric tons of cocaine produced in Peru, Colombia, and Bolivia (OAS 2013). All such numbers, given the invisibility of illicit drug use and drug flows, are of course open to methodological debate, and wide ranges and confidence intervals.

Cocaine has a long history, starting with its medical discovery in 1860. With its minor regulated medical role as a specialized surgical anesthetic, cocaine is still categorized as a Schedule II drug in the United States. Cocaine became notorious as an illicit drug during the 1980s and 1990s, particularly in the United States. At its peak more than 25 million Americans had tried the drug, including a substantial portion of young people. By then, however, cocaine had also become associated with “crack” cocaine – a smokable form of the drug overwhelmingly used and trafficked by a distinctive urban underclass drug culture. The post-1980 cocaine era was also strongly associated with gang violence, media and government sensationalism about crack, and the escalating US war on drugs. On the domestic front, this meant harshly punitive drug laws and high rates of imprisonment for youth of color. Abroad, the United States has waged since the early 1980s a costly decades-long “drug war”

against the sources of the drug. This involves both militarized interdiction of cocaine smuggling by Colombian and other “cartels,” and forced coca eradication programs along the remote Amazonian slopes of the Andes where peasants grow the coca for illicit markets. Overall, these policies have had at best mixed success, and many unintended negative social consequences, such as heightened social violence along cocaine’s transiting routes, including Mexico’s recent dramatic surge of drug-related homicides (Gootenberg 2012). Since 2005, monitoring groups have been starting to note a significant drop in the number of Americans using cocaine, a welcome change that is still puzzling to drug specialists (Caulkins et al. 2014). However, the drug’s trade is, at the same time, undergoing an unprecedented globalization to unknown numbers of European, South American, Asian, and other global consumers.

Use and Effects

Powder cocaine hydrochloride, sniffed in small doses of 20–30 mg, is felt as a sudden intense sense of “euphoria,” enhanced energy and confidence, sexual arousal and sense of attraction, alertness, talkativeness, insight, hyperactivity, and at times sensory hallucinations. Effects come on quickly but begin to dissipate after half an hour to an hour, as the drug concentrations transform and disperse in the bloodstream. Cocaine can also be swallowed or applied to other membranes, which slows the intensity of the drug. The inhalation (smoking) of crack cocaine (and rarer now, injection) supplies a stronger and faster dose of cocaine to the brain, often described as “orgasmic,” and can lend itself to user “binging.” In very high doses, or after prolonged cycles of use, cocaine often produces negative psychological effects, including agitation, nervousness, seizures, prolonged sleeplessness, or feelings of paranoia, depression, or depletion. In the best of cases, such adverse effects turn users away from the drug; in the worst of cases, lives are ruined by obsessive use of cocaine, the delusional behaviors it fosters, or its steep cost and legal consequences. Permanent or direct damage to mental health, such as psychosis, is, however, fairly rare (Phillips and Winn 1980, ch. 10; Morgan and Zimmer 1997). After decades of the drug in the US mainstream, our mental hospitals are not filled with cocaine wrecks, much less the once popular idea of monstrous “crack babies” who had absorbed the drug in their mothers’ wombs. As a cardiovascular constrictor, cocaine also exerts marked physiological effects on blood vessels and accelerated heart rates, which in rare cases can result in cardiac arrhythmia and heart failure even among first-time users. This is what happened to Len Bias, the young Maryland basketball star whose highly publicized sudden death in 1986 set off the late 1980s firestorm of media and public panic about the drug. (Because Bias was black, his death is often but falsely attributed to crack rather than powder cocaine.) Mixing cocaine with alcohol use amplifies its effects, including adverse ones.

As a nonmedical drug specialist, I cannot do justice to the growing science of cocaine. The drug works on key human neurochemical transmitters, particularly dopamine, that control regulatory and involuntary functions of central nervous

system (CNS). By inhibiting (blocking) dopamine “uptake” to its nerve cell receptors, cocaine quickly concentrates dopamine, which in essence intensifies and accelerates (some would say “hijacks”) normal nerve, brain, sensory, and bodily rhythms. Cocaine’s link to dopamine impact is long known, but an instructive recent discovery comes from the field of pharmacodynamics, that is, how drugs dynamically interact within the brain. Using positron emission tomography (PET) scans of user brain activity, in the late 1990s one of the country’s leading cocaine researchers (Volkov) discovered that the drug closest to cocaine action is Ritalin, legally prescribed to millions of US school children as a therapy for hyperactivity (DeGrandpre 2006). This finding illustrates the permeable line separating illicit from therapeutic drugs.

Cocaine “addiction” is a contested concept, though it is still often presented as fact by medical and drug control authorities. Cocaine has none of the tolerance or withdrawal symptoms defined by opiates and alcohol (Grinspoon and Bakalar 1985, ch. 8). The vast majority of people who try cocaine, unlike tobacco, never go on to become “chronic users” (officially defined now as four or more times monthly). However, this minority of chronic users, now down to about 2.5 million in the United States, is believed to drive the steady demand for cocaine, rather than casual “fun”-seekers. There are also binge or heavy users – sometimes due to any sudden influx of cash – who learn to stop or self-regulate their use, for example, confined to weekends (Waldorf, Reinerman, and Murphy 1991). By the 1990s, cocaine addiction was replaced in medical discourse by the softer concept of psychological dependence or “craving” (ironically, a term used by one Sigmund Freud, a pioneer cocaine researcher of the 1880s, to describe his feelings about the drug). The pharmacology of cocaine craving, however, is still inconclusive, despite a generation of drug researchers who now study brain scans of chronic users in search of a “disease model” of the drug (DeGrandpre 2006, 232–35). Since what drives people to irresistibly desire cocaine or other powerfully reinforcing stimulants (like amphetamines) is not well understood, and likely not solely chemical, its “treatment” is also not very specific nor effective (Kleinman, Caukins, and Hawken 2011, 109–11), despite claims by therapists. Unlike methadone and opiates, no working substitution treatment has emerged for cocaine, and the National Institute on Drug Abuse (NIDA) orients research instead to a so-called “vaccine.”

Cocaine, while a problematic drug for many, is hardly immutable, with one type of user or “steel”-like drug experience. Like all psychoactive drugs, cocaine usage is deeply mixed up with psychological self-expectations and the complex, interactive social “set and settings” of its use, for example, the glamor, money, and sexual allure that often infuses elite cocaine culture. This has been empirically studied. One of the most in-depth and broadest sociological studies of heavy cocaine users of the 1980s (Waldorf et al. 1991) underscored the “changes” experienced in patterns of usage, self-awareness, and abilities to mature out of, control, or leave behind cocaine. These behaviors strongly relate to social factors such as income, job stability, or family life. Similarly, the WHO/UNICRI Cocaine Project of 1992–94 (WHO/UNICRI 1995) revealed the diversity of global styles of cocaine use, from the homeless and street children in some locales to affluent professional elites in others, gay scenes, men and

women, with a range of cultural variation in its use, dangers, and significance. (This report was famously suppressed by the powerful US anti-drug establishment.) Indeed, the chief distinctions made in the United States between crack users and powder cocaine users are largely socioeconomic and legal. Chemically they are the same, though effects differ from the mode and speed of absorption – pharmacokinetics – to the brain. Just as important, crack inhalers are predominantly poor, youth of color, unemployed or working the bottom rungs of the illicit street economy targeted by police (Bourgeois 1995; Palomar and Ompad 2014). Pricier powder cocaine is most often used by stable, whiter, and wealthier populations, including some groups that view it as an occupational or lifestyle necessity (Wall Street, the movie industry). Legally, during the late 1980s possession and selling of crack became burdened by far higher criminal sentencing penalties and draconian enforcement (Coyle 2002), so-called “racial disparities,” which became the main distinction of the two forms of the drug.

For these reasons, and my professional background as an historian of drugs, the rest of this essay focuses on the deeper historical plasticity of cocaine, leading into its rapidly changing historical present. Cocaine’s profile has shifted dramatically across a long set of historical stages. Such changes registered in distinctive legal regimes around the drug, in cocaine’s rising and falling prestige and legitimacy, its paths of illicit use, in the severity of its social harms, its societal perception as a “hard” or “soft” drug, and drug prohibition’s impacts on consuming, producing, and trafficking areas and actors. Cocaine is more than a dopamine inhibitor, a stimulant, a habit, or a pleasure. The broad history of a drug can rarely provide a singular clear scientific policy “lesson” (MacCoun and Reuter 2001); however, cocaine’s variable past may suggest flexible ways of thinking about and dealing with the drug.

Coca to Cocaine

The history of cocaine is deeply entwined with the native Andean coca leaf. The trend today (in contrast to cocaine and crack) is to declare the two very different: cocaine a malicious modern foreign drug and “traditional” coca a benign *nondrug* of the indigenous peoples of the Andes. The coca shrub (with two domesticated species, *Erythroxylum coca* and the northern Andes *Erythroxylum novogranatense*) is one of the oldest cultivars in the Americas, with at least 8,000 years behind it, first likely domesticated in northeast Peru (Plowman 1985). Andean and lowland Amazonian cultures were using and venerating it long before the Cusco Incas of imperial Tawantinsuyo (1430s–1530s) declared it their own luxury “Sacred Leaf,” attempting to regulate and redistribute its use among nobles and the peasant masses. Historically, coca leaf is central to highland (and some lowland) peoples – as an object of ecological exchange and integration, a ritualized symbol of community, a spiritual link to gods, a mark of Indian social identity, an everyday work stimulant, or to ward off hunger and cold in stressful high-altitude environments and for a range of medicinal and nutritional purposes. Cocaine (less than 1% of the leaf) is one of the plant’s 18

major alkaloids. Anthropologists still debate if mastication of the dried leaf (the “chewing” is actually sucking), aided by an alkaline ash (*ilipta*), is to extract cocaine, or other compounds such as ecgonine, which assists in highland glucose absorption and oxygen transport. Coca is certainly necessary to being an Indian in the central Andes; however, it is no longer deemed drug use or “addiction.”

Despite its timeless “traditional” imagery, coca has gone through a long series of historical changes. After the 1532 conquest of the Incas, coca use – a vice tolerated by the Spaniards for coerced labor in strategic colonial mines – likely spread among commoners, but also became a sign of their colonized caste status as Indians. Its stimulant properties were in doubt in European botany until verified by the 1860 isolation of cocaine, which raised coca’s global prestige, even to Peru’s narrow non-Indian national elites. However, by the early twentieth century, given the advancing anti-drug influence of Western toxicology, and changing local forms of racism against the Andean peasantry, coca became seen as a racially “degenerative” drug habit. In 1961, Article 49 the UN Single Convention on Narcotic Drugs – the bed-rock of the modern global drug regime – set the goal, largely to combat cocaine, of “eradication” of the leaf, globally instituting prejudice against the leaf. The story hardly ends here: post 1970s, coca has witnessed a still unstudied re-vindication: medical scientists abandoned unfounded suspicions of the leaf, anthropologists declared it essential to the life-ways, health, and cultural integrity of Andean peoples, new indigenous movements proudly embrace it, and political leaders like Evo Morales in Bolivia (2006–), a former head of the coca growers’ union, made coca into a high matter of nationalist politics. In part, coca’s rising status is inversely tied to the disreputable, illicit, violence-prone Western “drug” cocaine. The UN drug regime, however, lags behind today’s indigenous rights view of coca, at odds with its very own principles for global protection of cultural minorities. At least 5 million Andeans use coca on a daily basis, over 3 million in Bolivia alone.

During the 1970s, coca became *the* strategic peasant survival crop of a huge swath of the “Andean Ridge,” at ecological cost to a unique bio-diversity environment. The 3–6-foot coca shrub was long grown on plots in the *Ceja de Montaña* in Peru, in the 500–2,000-meter range, and in Bolivia by planters in the deep *Yungas* ravines, both humid tropical zones where the Amazon meets the Andes. In both nations, however, coca production rose swiftly after mid-century from colonization and new roads into vast lowland Amazon frontiers such as Peru’s Huallaga Valley or Bolivia’s Chapare region. Since the 1970s, coca’s explosive and shifting cultivation is largely driven by illicit cocaine, with literally hundreds of thousands of “cocalero” peasant households (some 75,000 alone today in Peru’s conflicted Apurímac river system) exploiting hundreds of thousands of hectares of newly deforested lands. In Peru, a smaller separate legal sector and market remains for “traditional” use, whereas in Bolivia, coca in the new legal “catos” land system is already greater than illicit drug crops. In Bolivia, coca use has also generalized across most national groups, including mixed-culture mestizos, lowlanders, and the borderlands of Argentina. The government (defying the United States and the Drug Enforcement Administration [DEA]) has instituted community “social control” programs to rein

in cultivation for cocaine and plans to globally commercialize coca products like teas, soaps, and health goods (NACLA 2014). In Peru, coca use is still largely confined to poor Quechua-speaking highland communities. In Colombia, which had few coca-using Indians left by the last century (save for Cauca's coca-reverent Nasa people and the Arhuacos of the Sierra Nevada de Santa Marta) and a separate species of *Erythroxylum (novogranatense)*, virtually all coca cultivation was spurred by national traffickers of the 1980s who enlisted land-hungry peasants to make cocaine in lowland Putamayo frontiers. As a result of eradication campaigns, coca then scattered across most of the country's ecological niches.

The techniques for making cocaine from coca leaf are relatively simple. Cocaleros pulverize fresh coca leaves, harvested 3–4 times yearly, in plastic lined pits, leaching out alkaloids with rudimentary solvents such as alcohol, kerosene, sodium bicarbonate, and cement lime (Phillips and Wynne 1980, ch. 8). Workers face serious health and environmental risks. It takes about 125 kilos of leaf per kilo of cocaine. The result is a sulfide cake known as *pasta básica de cocaína* (PBC). Highly portable PBC is commercialized into a larger “global commodity chain” managed largely by international drug-trafficking groups in Colombia and Mexico, known as “cartels” – a serious misnomer, given their dispersed, flexible, high entrepreneurial skills (Kenney 2007). During the 1980s and 1990s, equipped “chemists,” located mainly in large-scale Colombian “labs,” performed the more specialized tasks of converting PBC into powder cocaine hydrochloride (HCl). Competition and the drug war has driven cocaine processing labs to become more high-tech, efficient, and decentralized. From there, cocaine flows into intricate smuggling networks to final dealers and consumers across many borders, in this stage as a progressively more diluted product. Much could be said about the sophistication of cocaine's home-grown transnational organized crime groups which, with \$25–40 billion in US retail cocaine sales alone, still dominate hemispheric drug trades. Worth noting, as a stylized “value chain,” is the trade's wildly asymmetrical shape. A kilo of PBC fetches about \$600 at the “farm gate”; rises to \$6,000 as finished cocaine HCl leaving Colombia; is worth more than \$27,000 wholesale by the Mexican border; and fetches about \$330,000 per kilo from street sales in the United States. Given its skewed risk structure, cocaine undergoes a 500-fold value mark-up, far higher than any legal good. Less than 1% of revenues are actually retained by the original peasant growers in the Andes and Amazon (OAS 2013, ch.6).

Cocaine's Discovery and Development as a Legal Medicinal Commodity (1850–1900)

Cocaine, as seen, is a malleable and varied drug; coca leaf has flexible historical meanings and constructed commodity chains tied to cocaine. Cocaine itself has passed through a series of defined historical stages, including its shape-shifting present as a globalizing drug. Most of these changes emerged from the larger political constructs surrounding cocaine, including global empires as well as

international and especially US efforts – across an informal imperial realm – to control or stamp out the drug since 1910.

The Spanish American Empire, after sharp clerical debate, tolerated or encouraged the trade of coca to Indians at its vital high-altitude silver mines such as Potosí. Coca was thus an indirectly strategic factor in the expansion of the early modern world economy so based upon Peruvian silver. However, during the colonial era from the 1540s to the 1800s, coca was not turned into an international commodity, in contrast to American tobacco or Mexican cacao (chocolate), both of which became major Europeanized global goods. The “chewing” of coca was culturally off-putting to Spaniards, as were its subversive or pagan affinities with the deposed but revered Incas. Rare samples of coca leaf that reached European naturalists were invariably inert, after a long sea voyage and deteriorating fungal rot. In fact, by the eighteenth century, European scientists largely considered the energizing properties of coca a primitive Indian myth.

During the nineteenth century, after the fall of Spain’s empire in the Andes, a wave of new interest swirled around coca, which led, almost inexorably, to the modern isolation of cocaine in 1860 by German science. Fascination with exotic South American plants, peoples, and commerce, first-hand travelers’ accounts, the early strides of alkaloid sciences, the industrial-era quest for energy-enhancing drugs, and better coca supplies all converged in the 1860 discovery of cocaine by the German PhD student chemist Albert Niemann at Göttingen University. At first, from 1860 to 1885, cocaine remained a rare medical novelty, produced in minute batches by the pioneering drug firm of E. Merck of Darmstadt. During this quarter-century, positive scientific and general interest in this model “modern” laboratory drug spread, and it was studied for possible uses by dozens of chemists and medical scientists across the globe, including, famously, the young Dr Sigmund Freud. One paradox of this experimental phase is the prestige boost that cocaine lent to Andean coca leaf, which finally, to most medical experts, was proof of its stimulant essence (Kennedy 1985). This quickly translated into commercial applications. In an age of wide concern with nervous disorders, such as neurasthenia and hysteria, neurologists such as George Beard in the United States began to see coca as especially therapeutic. The most spectacular coca product was *Vin Mariani*, a red-wine coca syrup beverage concocted by Parisian-based pharmacist Angelo Mariani, who tirelessly promoted it, and coca’s medicinal properties, among cultural elites in Europe and then across the Atlantic. In the United States, grassroots enthusiasm for coca tinctures and other products spread rapidly, soon cultivated by herbalist firms such as Detroit’s Parke, Davis, and by the 1890s as an ingredient in the vast patent medicine industry. One legacy of this era is *Coca-Cola*, invented in 1886 by Atlanta pharmacist John Pemberton as a dry “soft-drink” imitation of *Vin Mariani*. It quickly became one of the most recognizable commodities of the twentieth century, its cocaine alkaloid removed in 1903, as well as a hidden element in the Andean coca trade. This benign age of coca products is relevant to policymakers today, particularly in Bolivia, who are hoping to restore a legal global market for coca as a commercial alternative to illicit cocaine.

Cocaine's role was transformed in 1884, when Karl Köller, a Viennese ophthalmology researcher, discovered cocaine's first genuine medical application: local anesthesia, soon elaborated to forms of general nerve block anesthesia. News spread rapidly across Atlantic medical circles, and over the next decade, cocaine revolutionized the practice and possibilities of modern surgery, honed by some of the leading figures of the age, such as Johns Hopkins surgeon William S. Halstead (like Freud, also an avid user-abuser). The scientific prestige of cocaine peaked in the late 1880s. Dozens more medical researchers jumped into the field, looking for new applications for this "miracle" drug, including respiratory illness such as asthma and hay fever, low-dose sore and hoarse throat and cough cures, toothache, hemorrhoid, and burn remedies, and for psychological afflictions such as addiction and melancholy. Often seen as an irresponsible search for panaceas, the major study of late nineteenth-century cocaine medicine shows that most research was eminently modern and researchers became quickly aware of cocaine's limits and dangers in medical practice (Spillane 2000).

The rocketing medical demand for cocaine after 1884 spurred the construction of a modern international commodity circuit for the drug. Germany's Merck led the way, producing 300 kilos by 1888 and on up to a 5,000-kilo peak in 1905. Indeed, cocaine profits literally fueled Merck's transformation into a diversified international pharmaceutical giant. About a dozen other German firms also made legal cocaine by the 1890s, plus a handful of US firms, by 1900 led by the expanded Parke, Davis and a branch of Merck based in New Jersey. One vital but forgotten part of this story was the Andean Initiative: a Lima-based pharmacist, Alfredo Bignon, invented an efficient and economical way of making shippable cocaine sulfide paste out of fresh coca leaf. This product, "crude cocaine," the precursor to PBC, transformed the global industry, which soon relied on more than a dozen supply workshops near expanding Peruvian coca plantations (Gootenberg 2009). The cocaine industry, considered a modernizing success story in Peru, was centered by 1900 in the coca region of eastern Huánuco, above the tropical Huallaga Valley. Peru exported at its peak some 10 tons of the drug. Bolivia, on the other hand, an initial supplier of coca for Vin Mariani, never "industrialized" the leaf, likely due to transport costs, and by 1910 focused on ample traditional domestic usage.

By no means was legal cocaine some unmitigated success story. Doubts about the drug quickly surfaced. It was in 1887 that Freud noted a deeply ambivalent "Craving for and Fear of Cocaine," a lasting scientific-cultural characterization of the drug (Byck 1974). Cocaine's prestige plunged. First, medical practitioners became acutely aware of cocaine's perilous side effects, including various forms of toxicity, delirium, habituation, and in some cases, heart failure. The profession mainly regulated itself and progressively restricted cocaine's indications. Second, larger "ethical" (wholesale) pharmaceutical firms worried about the reputational harm of cocaine peddled as a stimulant by unscrupulous retailers of patent and mail-order medicines. Third, recreational use (by injection, then mainly sniffing) began to emerge by the 1890s and, in some areas, was soon associated with gangs, marginal groups such as prostitutes and pimps, and racial minorities such as African Americans in the US south

(where cocaine was sometimes provided as a work stimulant). With such growing concerns in mind, in the United States, for example, many local governments such as states and municipalities began to restrict cocaine more than a decade before federal law was passed in 1914 (Spillane 2000). A gray recreation market formed, fed by leakage or theft of pharmaceutical-grade cocaine hydrochloride from pharmacies. Similar “coke” scenes erupted in turn-of-the-century Europe and even in Brazil and India. Whatever the obvious flaws of legal cocaine, however, it did not lead yet to a globalized illicit industry of cocaine, nor to the drug’s massive social disruptions of the late twentieth century.

Cocaine’s Restrictions and Global Spread and Decline, 1910–45

The drive to restrict cocaine shared roots with the international anti-opiates and anti-inebriant movements, and was strongest in the United States, where it was racialized against blacks during the Jim Crow era. Historians offer many explanations for prohibitions: the professionalization of medicine in institutions such as the American Medical Association (AMA), the clear – and imagined – public health dangers of cocaine, the Progressive-era regulatory politics of the pharmaceutical industry, the frightful public sight of cocaine “fiends,” an entirely novel social type, and diffuse modern anxieties about race, gender, and urban boundaries (Kohn 1999). In the United States, cocaine content became labeled under the 1906 FDA Acts; the drug was subsumed in the 1914 Federal Harrison Tax Act, and imports fully prohibited by 1922. In Britain, war panic brought cocaine sales under DORA (the 1916 Defense of the Realm Act). In the United States, one paradox was the ban on benign herbal coca additive products (special de-cocainized Coca-Cola syrup a notable legal exception), whereas some cocaine-laced tonics, duly labeled, circulated into the 1920s.

Until after World War II, however, the international anti-cocaine legal regime that emerged remained fairly weak and fragmented. By no means was this a working system of drug “prohibitions” (Nadelmann 1989). In backroom and big-power politics, the cocaine issue became tacked onto the International Opium Conventions of 1912–14, and signatories of the Versailles Treaty and League of Nation member states pledged to restrict cocaine and provide annual statistics on the drug’s production. Even this reporting proved largely illusory. The League’s anti-drug bodies, such as the President’s Commission on Organized Crime (PCOC), focused overwhelmingly on controlling opiates such as morphine. Mid-1920s debates in Geneva to curtail coca went nowhere, and in fact elicited a spirited defense of the leaf from Bolivian delegations. Negotiations in the 1930s on quotas on manufacturing and “trafficking” of dangerous drugs similarly failed. Many producer countries, like Peru, simply ignored any emerging restrictions.

However, in other ways, the global anti-cocaine discourse, and other market and political interventions, had the effect of significantly reining in the scale of global cocaine. Cocaine production peaked around 15 tons during World War I, but by the

aftermath of World War II, legitimate global medicinal quotas slipped to under 500 kilos. Medical demands for cocaine fell precipitously; for example, in dentistry it was replaced in the 1910s with safe substitutes such as novocaine. Markets for cocaine became saturated and prices plunged, leading to non-market controls. The dominant German pharmaceutical industry, by 1906, formed a series of cartel-like cocaine pricing arrangements among national firms, an idea that by 1911 and throughout the 1920s extended to a broader European scale (Friman 1999). The Dutch swiftly rose to prominence as cocaine producers with the modern state-sponsored NCF factory, linked to colonial coca plantations in the Dutch West Indies, but opted by the 1930s to decommission most of that circuit (De Kort 1999). In the United States, by the late 1920s, narcotics law favored the concentration of highly regulated production from Peruvian leaf in just two firms, both in New Jersey, one devoted to the Coca-Cola circuit. For reasons still unstudied by historians, urban cocaine panic in the teens became a street drought of the drug by the 1930s – a cycle that would repeat itself with different results in the 1980s.

Global coca and cocaine production restructured itself into separate regional blocs (Gootenberg 1999). In the late nineteenth century, Peru proudly held a natural monopoly on the leaf and crude cocaine exports, but by 1920, belated intensive colonial agricultural projects by the Dutch in Java and Japanese in Taiwan depressed the Peruvian cocaine business (Britain earlier halted its coca projects in India). Perhaps surprising to non-specialists who think of coca as something intrinsically Andean, by 1914 the Dutch marketed over 1,500 kilos of cocaine and even coca throughout Europe; by the 1920s, Japanese drug firms, also guided by the state, made 2,000–3,000 kilos a year, mostly for Asian consumption. Peruvian cocaine sales, to a handful of German firms, became stagnant and erratic, at a fifth of 1905 volume and a fraction of former revenue. Peruvian owners and officials saw their whole industry in crisis, and by the 1930s debated state monopolies to salvage their earlier global shares and to help regulate drugs. It was then, taking Western cues, that pro-Indian “indigenista” reformers in Peru also began to regard Indian coca use, until then a tolerable vice, as a deplorable drug “addiction.”

During this dispersal and decline, and the drug’s fragile global restrictive system, it is notable that a highly diverse regime generated no global illicit market or chain in cocaine, and only modest social disruptions with the drug (Gootenberg 1999). Legal cocaine, now lower in status and scale, was being produced in Peru, Germany, Japan, Holland, the United States, and a number of other sites. The successful swift Asian transplant of coca might be a warning to drug warriors today (Karch 1999). Although smuggling, or colorful cocaine use, has been reported in places as far apart as Rotterdam, Paris, Berlin, Moscow, Egypt, the Straits of Malaysia, Valparaíso, Panama, and Buenos Aires, mostly in ports, none sparked cocaine scenes or markets with wider and lasting social consequences. All depended on opportunistic theft or individual smuggling of pharmaceutical drugs. Rumors of thriving illicit trades in early 1930s India, or accusations of Japanese cocaine “trafficking” in Asia, are still unfounded. No illicit production of cocaine, despite the PBC technology

and know-how, came out of the Andean homeland of cocaine until after 1945. A weak and plural global drug regime likely diffused the incentives for illicit trades.

Global Prohibitions and Illicit Cocaine (1945–75)

Between 1945 and 1961, postwar geopolitics favored the erection of a full prohibitions regime against cocaine, led by the United States, the nation with the most active anti-cocaine politics. US forces occupied, dismantled, and regulated former bastions of cocaine production in Germany, Japan, and Java; US ideas reigned in the new and stronger UN-centered institutions of global drug control, such as the CND; US power, magnified in the Cold War, was acutely felt in Andean nations, including Peru's last site of world cocaine supply. US propaganda aside, even global communist rivals supported strict supply-based international drug controls. A working prohibitions regime required the criminalization of supply zones by cooperative states – Peru by 1949, Bolivia, delayed by revolution, in 1961. Dedicated UN campaigns such as the visiting 1948–50 Andean “Commission of Enquiry on the Coca Leaf” guided that process. The capstone of the system was the special attention to cocaine in the long-negotiated 1961 UN Single Convention on Narcotic Drugs – still the cornerstone of the global drug regime – which mandated, in an unprecedented move, the actual eradication of coca leaf in the Andes in “25 years.”

The outcome of the first quarter-century of full cocaine prohibition was its exact opposite: the creation, by 1970, of working networks of illicit cocaine, perfected by ever more professionalized and enterprising long-distance traffickers, linking thousands of new coca peasants of Amazonian Peru and Bolivia to burgeoning northern markets of recreational coke. Fields of illicit coca bush were spreading across remote colonization zones of the Andes – down the Huallaga in Peru, the Chapare in Bolivia – fielding a few tons of coke, via mainly Cuban and Chilean intermediaries, to upscale users in New York and Hollywood. Cocaine's renewed cultural allure quickly span out of control in American society during the 1970s.

Unlike interwar and postwar heroin pipelines from Asia, the formation of this new illicit hemispheric cocaine network is not well known. The US-led criminalization of source areas, the aging eastern Huánuco cocaine district, swiftly led into illicit flows as former factory owners passed their lore and techniques, including the making of PBC (a vestige of their original cocaine paste for German export) to new-fangled “chemists” and cocalero peasants downstream in the tropical Huallaga. The “war” hubris brought by US drug agents overwhelmed older Peruvian ideas of national health controls. US FBN (Federal Bureau of Narcotics) and Peruvian military crackdowns against these “subversive” small enterprises led to their rapid spillover to Bolivia. There, the breakdown of authority in the 1952 revolution, including a flood of land-hungry peasants into jungle colonization zones, became fertile ground for the incubation of dozens of small active cocaine “labs” by the early 1960s. Two main groups of long-distance traffickers quickly arose to handle the flow: trading clans from northern Chile and Havana mafiosos, the latter also feeding

in the 1950s an exotic pan-American and “Latin”-style tourist taste for the drug. Continuous US and INTERPOL efforts to chase them down – in a spiraling but secret hemispheric anti-cocaine war of the 1950s and 1960s – only made these smugglers stronger and more dispersed (Gootenberg 2009). So did the 1960 Cuban Revolution, which expelled now seasoned cocaine traffickers to all parts of the Americas, including Mexico and Miami. By the mid-1960s, US and UN authorities convened a number of emergency hemispheric policing summits on the drug, to no avail. The final and Cold-War twist in this story came in late 1973: the newly created DEA’s green light to Chile’s newly installed dictator Gen. Pinochet to smash the nation’s traffickers – the final step, they soon discovered, in the diversion of cocaine’s commodity chains north through highly entrepreneurial groups arising in Colombian cities such as Medellín. By 1975, the new Colombian connection was not only going strong but turning the cocaine industry into a dynamic wholesale enterprise, organized in regional cartels that by 1980 flew about 100 tons of coke north, mostly via Colombians and Cubans in South Florida.

Cocaine’s resurgence, still almost entirely along this Andean–US axis, has been attributed mainly to cultural amnesia about the drug and moneyed-class glamorization of its use as a “soft drug” during the 1970s (Courtwright 1995; Musto 1991). I’d argue differently: full-fledged governmental prohibition of the drug starting in 1949, and systematic efforts at its repression abroad, energized for the first time an actual international illicit chain of the drug, which through a series of post-1960s political and cultural transformations found its eager US consumers. It was not at first even violent, just illicit, and by the early 1970s attracting users as an unintended boon of Nixon’s newly declared “war on drugs” such as pot, speed, and smack. Illicit cocaine might have emerged in any case, but the way it actually did was a constricting effect of global prohibition and related US power politics of the Cold War.

The Age (and War) on Cocaine: 1980–2005

The 1980s and 1990s can be aptly called the “Age of Cocaine.” It was marked by a destructive drug relationship between the United States and the Andean region, driven by an ever-escalating US drug war against cocaine abroad and user minorities at home. By the mid-1970s, the culture of cocaine had been rediscovered and reinvented in the United States, emanating from hedonistic movie and rock stars, Wall-Streeters, and disco clubs. It was a harbinger of emerging “yuppie” culture. By 1977, the drug had 4.1 million “regular” users, and had been tried by a tenth of all US youth. By the early 1980s it had broadened into a white middle-class party phenomenon, too. By 1986, 22 million Americans had tried cocaine and a third of all youth. By then, cocaine accounted on average for two-thirds of all US outlays on illegal drugs. But by the late 1980s, declining prices and easy availability – a kilo fell from \$60,000 in Florida to \$15,000 by the decade’s end – pushed coke frighteningly down the class and racial ladder as “crack,” moving it quickly from soft to “hard drug” status amid the violent aura of urban gang strife. In the mid-1990s, the drug’s

market finally stabilized with approximately 14 million regular users worldwide, half of them still American.

To feed this frenzy, the capacity for illicit cocaine production from the Andes also grew phenomenally. If the nascent postwar Andean chain hit at most 10 tons of the drug by the mid-1970s (equal to its 1905 legal peak), by 1980, enterprising Colombians hiked it to over 100 tons, and by the 1990s total illicit cocaine capacity topped and stayed at around 1,000 metric tons, from all Peruvian, Bolivian, and Colombian sources. Whole regions became dedicated cocaine production platforms: Peru's tropical Huallaga Valley alone, which at first fed the booming business of processing labs and traffickers in Colombia, had 33,000 hectares in coca by 1979, doubling in the mid-1980s, and reaching 120,000 hectares in the early 1990s worked by 60,000 coca peasant households (Gootenberg 2009). This was far from the 1961 UN declaration of eradicating the coca bush and cocaine by 1986 – a year, instead, marked by a notoriously corrupt Bolivian “narco-state” and the Reagan-era “crack epidemic” in the United States.

The “age of cocaine” brought to the fore, and was intensified by, long-latent principles in the US drug war. On the overseas front, this meant the militarization of interdiction and aggressive moves to eliminate the drug at its rural “source” in the Andes. A DEA–military-style build-up occurred in the mid-1980s, as both DEA and military budgets for fighting cocaine rocketed from under \$100 million a year to over \$1 billion each in the 1980s. Militarization consolidated with the early 1980s Operation Swordfish against cocaine lanes into South Florida; became official under Reagan's 1986 NSD-221 declaration of drugs as a “National Security Threat”; and registered in major (G.H.W.) Bush operations such as the 1988 Blast Furnace in Bolivia, the 1989 invasion of Panama, and the Huallaga Valley Santa Marta firebase. It underlay the SOUTHCOM and Special Forces training strategies behind the 1990 Andean Initiative with Andean states. By the 1990s, this war absorbed almost \$10 billion annually.

However, the main effects of this sustained militant policy badly backfired. It dramatically pushed up supplies of cocaine, by inducing traffickers, already profiting from prohibition-inflated prices, to seed ever more coca to offset growing risks of interdiction and to find new safe-havens for cultivation and transit (the “balloon” effect), and helped traffickers, Darwinian-style, adapt into smarter and better structured and equipped smugglers (Kenney 2007). As cocaine flooded the United States, street prices plummeted, the opposite of DEA aims of driving up user prices – a goal not met once until 2007. US policies also likely aggravated the competitive business, political, and guerrilla violence that enveloped the trade by the mid-1980s, for example, the extradition campaign against aggressive publically known Colombian “kingpins” (Youngers and Rosin 2004). The spiraling savage cocaine violence became most apparent in Colombia, where cartel political assassinations (judges, presidential candidates, ministers of state), kidnappings, and urban terrorism reached civil war scale by 1990. For a decade, Medellín suffered the world's highest murder rate and traffickers threatened the state, simply corrupted and undermined in other nations such as Peru and Bolivia. Yet, this bloodshed aside, what most visibly changed under

prolonged drug-war pressures was the shape and location of cocaine's existing illicit commodity chain (Gootenberg 2012). US operations against Caribbean routes forced Colombian traffickers to quickly reroute their trade through Central America and northern Mexico by 1990, enriching, empowering, and emboldening Mexican drug lords; the slow compliance of Peruvian and Bolivian authoritarians against their cocaleros in the 1990s only led to the rapid transfer by 1995 of coca cultivation, fostered by Cali interests, to southeast Colombia, a country with scant coca before. By 2000, Colombians, with 163,000 hectares under coca, had brought into one country the long-separate illicit realms of coca and cocaine.

On the domestic front, the 1980s war on cocaine was matched by the highly racialized punitive criminalization of drugs, as if harking back to the primal coke scares of the early 1900s. Punitive drug laws date to both the 1920s and 1950s, but nothing matched the fury Reagan unleashed against drug dealers and users in the 1986 Senate Anti-Drug Abuse Act, with substantial mandatory minimums for even first-time offenders, expanded in Clinton's signature 1994 \$30 billion crime bill (Andreas 2013). This era saw the institution of sharp racial disparities in federal sentences (crack vs powder cocaine), arbitrary asset confiscation, highly militarized narcotics units and SWAT teams, armed by the Byrne Grants program, and a massive and sustained round-up of American drug users, mainly black and brown. US federal prison populations swelled from 300,000 to 2 million in 2000, mostly driven by drugs (cocaine, but also marijuana). More than 90% of the new inmates were minorities. This crackdown transformed the United States, a country without higher base crime rates, into far and away the world's most incarcerating state, institutionalizing the mass disenfranchisement that critics now dub the "New Jim Crow" (Alexander 2010).

The Crack "Epidemic"

Much of this US social tragedy might have been averted without the politics of "crack," which itself reflected the hostile neglect of cities, civil rights, minorities, the poor, and jobless of the Reagan years, and beyond (Reinarman and Levine 1997). Most of what was broadcast by the media about crack from 1985 to 1990 was largely untrue and offensive (crack-whores, crack babies, crack-heads, crack houses joining a long sordid US history of racial demonizing). Crack, crystallized "rocks" of cocaine, is chemically indistinguishable from powder cocaine, but as a cheaper (\$5–10 a shot) smokable form of the drug was a simple pre-packaged improvement upon the multistep and risky "free-basing" inhalation of cocaine vapors known through celebrity users in the 1970s. It was simply a quicker shot to the brain, as gin was to beer in the eighteenth century, another drug intensification that set off an historic moral panic. At a tenth of the unit price of powder sales, crack was a "marketing innovation" (Reinarman and Levine 2004) that opened cocaine's low-end retail frontier and a new demographic for the drug. Above all, crack reflected (putting aside populist blame – the-CIA style conspiracy theories) the immense

and prolonged price slides of cocaine since the 1970s, that is, the drug's surplus of supply, the perverse impact of US policies abroad.

On the street, crack developed a particular "political economy": mainly open-air markets, visible and vulnerable to arrest; the enlistment, as detailed in a close study of East Harlem, of young men and immigrants left behind from the collapsing promise of manufacturing jobs but ill-prepared for the "respectable" new urban service economy (Bourgois 1995); and revolving employment, as swift jailing of one youthful corner dealer opened new jobs for the next. These fierce market conditions and its socially marginalized user population are what made for crack's association with urban gangbangers, street killings, neighborhood decay, and personal degradation. For a few years, crack drove cocaine's market expansion, but mainly – out of media exaggeration, presidential alarmism, and tough-sounding congressional actions – it drove cocaine's redefinition as a "hard" drug.

In retrospect, mythologies aside, crack typically did involve distinct user populations: with low education, formal sector jobless, urban minorities (African American or Latino), high involvement in criminal activities such as petty robbery and "survival" sex work. It further aggravated health and social problems such as HIV and sharp homicide rates among black youth (Fischer et al. 2014; Palamar and Omped 2014). The emotive myths proved utterly false: an innate propensity of crack violence; "375,000" crack babies birthed per year (the entire panic disavowed by medical experts; longitudinal studies of exposed infants stress instead the high developmental risks of poverty environments) (Betancourt et al. 2011); an instantly addictive national "epidemic" (by 1991, US high-school-age crack initiates had already dropped from 4% to 1%). Aggressive profile policing and draconian crack sentencing (100–1 possession disparities and first-time 3–5-year minimums) arguably took a greater toll than crack on the social ecology of blighted neighborhoods. By 2000, 84% of those imprisoned for crack were black and 9% Latino (Coyle 2002). However, by the mid-1990s both the visibility and hysteria around crack were already receding, a change linked to demographic shifts, urban gentrification, and the advent of cheap cell-phones which allowed for less exposed markets. Hard data on crack cocaine's retreat is scarce: there were still about a half a million or more US users as late as 2005, but between 2002 and 2011, first-time crack usage fell from 337,000 to 67,000 per annum (Palamar and Omped 2014).

Ultimately, the Crack Era's wildly punitive and discriminatory drug laws, finally if only partially redressed by congressional reform in 2010, left deep generational racial scars on the US social landscape. Crack has reared its head elsewhere (Canada, the United Kingdom) and in different crude smokable mixes in producer sites such as Colombia and Peru (i.e., "basuco"). Its apparition elsewhere, for similar structural conditions of cocaine abundance and urban inequality, formed strangely reminiscent class subcultures in places such as urban Argentina ("paco") and Brazil ("merla"). Brazil, said to be the chief site for crack today, is grappling with infamously racialized and militarized "crackolandias," a phenomena likely also exaggerated by authorities and the local media (Fischer et al. 2014).

Cocaine's Historical Present, 2005–

Cocaine is currently undergoing more dramatic transformations: first, in terms of its globalizing consumption; second, the boomerang of illicit production from Colombia back to its historic birthplace in Peru; third, potentially, in its international politics. One striking trend waiting for specialists to explain it is a sudden falloff in cocaine use in the United States, a drop perhaps akin to the drug's withering "drought" of the 1920s–30s. The peak of US cocaine consumption was the early 1990s and cocaine use slowly stabilized. More effective US interdiction tactics in Colombia led traffickers to diversify sales to new sites in South America (now with more than 3.3 million regular users), and beyond, with visible spillover consumption arising along emergent routes across Brazil to West Africa toward European markets. From 2006 to 2010, this US drop accelerated as overall US consumption fell from some 300 tons to 145 tons and the core number of "chronic users" halved to some 2.5 million (Caulkins et al. 2014; ONDCP 2014). Cocaine now draws only a quarter of the "\$100 billion" that Americans supposedly spend on illegal drugs, its lowest share in decades, as we transform ourselves into a pot-smoking nation (surely a better, if wholly unintended, public health outcome of the exhausted US drug war). The United States has long been the catalyst of global anti-cocaine policies, so if this trend continues it will likely have repercussions for the politics of cocaine.

US (and some UN) officials believe that this falloff is a vindication of the long-fought war against Colombian cocaine, especially the \$8 billion spent on the more integrated policies of Plan Colombia since 1999. After a sluggish start, results began to show: depending on sources, Colombia's coca crop declined 40–50% between 2006 and 2010 and is now under 50,000 hectares. Colombia made just 300 tons of cocaine in 2013, most of it now confiscated in-country, and shipments to the United States are down by half since 2007. Colombia itself is a more peaceful, governable nation, albeit with millions of displaced and otherwise traumatized people. Its policy elites are now also critiquing the US model in international organizations, in a serious search for sustainable, less coercive, less violence-igniting drug policies,

However, there are some stunning side effects of Colombia's "success," even if they are not the direct result of planned policies (coca eradication, especially ecologically risky aerial fumigation, is actually a quite inefficient and unpredictable process). First was the shift of the epicenters of violence – from Colombian cities to the turf and power battles that broke out in the 1990s along lucrative then-new Mexican cocaine transiting sites to the United States (Gootenberg 2012). This shift, after 2007, led the Mexican state into its all-out "drug war," an apparent repeat of the Colombian struggle of the 1980s, in which at least 70,000 Mexicans have perished in six years of brutal violence. This conflict made coke pricier to find in the United States, but is now taking its destabilizing and high human toll south, as mobile Mexican and Colombian traffickers set up shop in weaker states such as Honduras and Guatemala, or in far South America. The mid-2014 child border refugee crisis (as I write) is yet another distant echo of this shifting drug war, as thousands of vulnerable Honduran and Central American youth flee for their lives from spiraling

drug gang violence at home. Second, world cocaine production did not dry up nor even substantially decrease, but mainly returned right back to Peru: indeed, in 2013, the UN officially declared Peru again the global leader in illicit cocaine, from a resurgence of coca underway since about 2007. In 2013, Peru produced 340 tons of cocaine, mainly in the remote VRAE (Valle de los Ríos Apurímac y Ene [Valley of the Apurímac and Ene River]) region, where tens of thousands of peasant households again furtively tend to the coca bush. The United States, following its Colombian model, is helping Peru to militarize its coca policies, with \$100 million slated for risky eradication goals in 2014. Bolivia, which after 2006 opted out of the DEA drug war for its national “social control” of cocaleros, has not seen any analogous drug resurgence, though traffickers often cross its territory from Peru (NACLA 2014; UNODC 2014). Brazil, where most Bolivian cocaine flows, is aiding Bolivia’s reform program, another new sign of diversifying regional drug policy.

These side effects – the ballooning of prohibition violence, and the boomeranging of coca zones – are what stir serious policy doubts, for the first time, about the long-accepted US source model of cocaine control, especially among leaders of the Latin American producing and transiting nations that pay the underlying social and political costs of cocaine (Bagley 2012). Moreover, Peru’s resurgent cocaine, rarely nabbed en route, has intriguing new destinations. Instead of flowing north to the United States, it is crossing directly to Brazil (since the early 2000s, the world’s second largest cocaine consumer) or in flights to Argentina for use and transshipment to Europe, Africa (Nigeria, South Africa), and likely to beckoning new Asian markets. Cocaine, finally displaced from the United States, is quickly going global. Funneled through Northern Ireland, Spain, and the Netherlands, pricey user scenes are thriving in the United Kingdom, Spain, Italy, and Russia, typical cocaine markets marked by widening income gaps and partying elites. US and Colombian drug authorities may be temporarily relieved, but for the rest of the world these changes may possibly shift the old geopolitics of cocaine. Cocaine remains an ever-changing drug.

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Methamphetamine

Ralph A. Weisheit

Introduction

Methamphetamine (meth) is a powerful central nervous system (CNS) stimulant. It is part of a family of stimulant drugs that includes amphetamine, cocaine, methylphenidate (i.e., Ritalin[®]), Adderall[®], and ecstasy. Its effects are, however, more powerful and longer lasting than those of other stimulants. For example, the half-life of cocaine in the system is about 90 minutes, whereas the half-life of methamphetamine is about 12 hours (Cho and Melega 2002). Meth is also unlike most other stimulants because of the wide range of ways in which it can be administered. Meth can be eaten, smoked, snorted, injected, or taken in suppository form. The effects of the drug are almost instantaneous when injected or smoked, are felt within about five minutes after snorting, and are felt within about 20 minutes after oral ingestion. Injection leads to the most rapid onset of addiction. The particular manner in which it is administered appears to vary from one geographic location to another, reflecting local customs.

Like most stimulants, the effects of meth are due to the release of the neurotransmitters dopamine, serotonin, and norepinephrine in the brain. While all three neurotransmitters are released by meth, most research has focused on dopamine and its effects. The release of dopamine has an effect on pleasure centers of the brain and specifically influences mood, hunger, body temperature, memory, attention, and problem-solving ability. Most who use meth experience intense pleasure, self-confidence, wakefulness, and a diminished appetite. Most who try alcohol, tobacco, heroin, or marijuana for the first time must learn to like them, but most who try meth for the first time find it instantly pleasurable. This has led some to conclude that the drug is instantly addictive. There is no evidence to support this for meth or

any other drug, at least as it applies to most users. As with most illicit drugs, the majority of users do so either experimentally or recreationally, with a small percentage advancing to full-blown addiction.

While the drug is easily abused, it can legally be prescribed in the United States for a variety of conditions, including narcolepsy, extreme obesity, and ADHD (attention deficit hyperactivity disorder). The United States Drug Enforcement Administration (DEA) has categorized legally manufactured methamphetamine (Desoxyn®) as a Schedule II drug, which means it can be purchased only with non-renewable prescriptions. Ironically, this means that under federal law meth is considered safer than marijuana, a Schedule I drug, legally defined as one for which there is no legitimate medical use.

A Brief History

Most of what has been written about the history of methamphetamine focuses on its emergence and use in the United States and in Japan. Missing are detailed historical accounts of the rise of methamphetamine in other parts of the globe, and in southeast Asia in particular, which has some of the highest consumption rates in the world. In addition, much of the written history of methamphetamine seamlessly shifts between methamphetamine and amphetamines more generally, not always making a distinction between the two. Because it is a common procedure and because as a family of drugs amphetamines share many common effects, this discussion of history will follow that pattern.

Methamphetamine was first synthesized in 1893 by the Japanese pharmacologist Nagai Nagayoshi and the crystalline version was first synthesized in 1919 by the Japanese pharmacologist A. Ogata Akira (Alexander 2013). Searching for an alternative to patented amphetamines, which were popular for treating a variety of ailments, methamphetamine was approved for sale in the United States by the FDA in 1944 and was sold in both injectable and pill forms (Parsons 2014). It was marketed as a medicine to treat asthma and other conditions under a variety of trade names, including Methedrine and Desoxyn. Treated as a legitimate medicine and consequently seen as relatively safe, amphetamines were used by truck drivers, shift workers, as study aids for students, and as a treatment for ADHD. They were also used as weight loss aids for housewives (Parsons 2014; Rasmussen 2008; Grinspoon and Hedblom 1975; Jenkins 1999). During World War II amphetamines were used extensively by British, Japanese, German, and American soldiers. There are credible claims that the increasingly bizarre behavior of Hitler over the course of the war was due to his extensive use of methamphetamine, though precisely which drugs were administered to him was a closely guarded secret.

Since its introduction, methamphetamine has never gone away, but the extent of its use and its visibility to the public has varied over time. In the United States, the consumption of amphetamines appears to have peaked in the late 1960s. “By the late 1970s, America’s speed epidemic seemed almost a concern of the past” (Rasmussen

2008, p. 4). Re-emerging as an issue in the far West in the 1980s, by the late 1990s methamphetamine had moved eastward, on its way to becoming a national concern.

Patterns of illicit drug use, like patterns of clothing fashion, tend to move in cycles. In the case of illicit drugs there is a general movement over time between stimulants and narcotics. That is, stimulants will be popular for a number of years, and as problems from use emerge drug users switch to narcotics, which then become popular for a number of years. This cycle tends to repeat with neither category of drug disappearing but simply gaining less attention. By the early 2010s methamphetamine was receiving less national attention as narcotic drugs became a concern, first with the abuse of prescription narcotics and then with heroin itself. However, appearing less frequently in newspaper headlines is no indication that methamphetamine has disappeared.

The pharmaceutical industry introduced the public to the use of both amphetamines and narcotics. Viewing legally manufactured prescription drugs as safe, it can be a small step from controlled medicinal use to abuse. When the government responds to growing levels of abuse by restricting access to legally distributed amphetamines and narcotics, dependent users may find relief in the illicit market.

Cycles of use and abuse of methamphetamine in Japan also illustrate the role of legitimate drug production in creating a market for illicit drugs. Prior to World War II, methamphetamine was primarily used in Japan as a medicine to treat such mental health problems as depression. During the war the Japanese military saw methamphetamine as a safe stimulant, useful for maintaining alertness for military personnel. To meet the needs of the military there was a dramatic increase in the production of methamphetamine in tablet form. After the war Japanese pharmaceutical companies released their stockpiles of methamphetamine to the public with relatively little regulation. Promoted as a safe medicine under the name Philopon, methamphetamine use increased until the mid-1950s, when the media and the government promoted the idea that methamphetamine led to acts of extreme violence (Sato, 2010). This led to government restrictions on the drug's availability and a diminution of the problem. The problem again surfaced in the 1970s and by the 2000s it has been estimated that methamphetamine abusers accounted for 90% of drug users in Japan (Harada 2010).

A Global Issue

Methamphetamine is a global concern and its use seems to be spreading to more countries. In Thailand meth is called "yabba," loosely translated as "crazy medicine" or "horse medicine." In South Africa it is called "tic," in Canada "jib," in New Zealand "P," and in Iran methamphetamine is called "shisheh." In Japan it is called hiropon or shabu. Although often manufactured in illicit laboratories, in the Czech Republic it is known by its trade name "Pervitin." In the United States there are hundreds of nicknames for meth; among the most popular are crank, speed, ice, glass, crystal, rock, go, and spin.

The UN *World Drug Report 2013* reports that seizures of methamphetamine have increased substantially, reaching new highs in the most recent year (88 metric tons),

73% more than in the previous year. According to the United Nations' report, countries reporting the highest amounts of methamphetamine seized were: Mexico (31 tons), United States (23 tons), China (14 tons), Thailand (10 tons), and Iran (4 tons). Other countries with substantial seizures of meth include Cambodia, Malaysia, Myanmar, the Lao People's Democratic Republic, Viet Nam, Singapore, Indonesia, and Bangladesh.

The report also indicates a global increase in the number of methamphetamine laboratories and in the number of countries in which they are found. These countries include the United States, Canada, Mexico, the Czech Republic, Belgium, Russia, Poland, and New Zealand. African nations (e.g., Benin, Ghana, Guinea, Mali, Nigeria, Senegal, and Togo) have also become major producers and traffickers in methamphetamine. From these countries meth is trafficked to East and South-East Asia, including Japan, Cambodia, China, Indonesia, Malaysia, the Philippines, the Republic of Korea, Thailand, Viet Nam, Australia, and New Zealand. These high figures for Africa are in spite of a persistent lack of data from the African region, both for the seizures of drugs and for the seizures of precursors.

Physiological Effects

When meth is taken a rush of dopamine is released, causing the user to feel intense pleasure, an increase in energy, and a sense of power, a feeling that they can accomplish anything. The larger the dose the more intense and long-lasting the effect. However, meth also inhibits the reuptake (recharging) of dopamine transmitters. This means that less dopamine is immediately available for release and a larger dose must be taken in order to achieve the same effect. This process is known as tolerance and with methamphetamine tolerance develops quickly. In addition, as the drug wears off the user experiences short-term depression – a low that corresponds to the high initially felt. For the heaviest users this leads not only to short-term depression but to long-term anhedonia, the inability to experience pleasure and the sense that the world is a dull and uninteresting place. Anhedonia can last for months after heavy use has ended.

Death by meth

Narcotics, depressants, and alcohol all slow bodily functions and if the doses are large enough the body's systems slow to the point of death by overdose. In contrast, meth speeds the heart rate while constricting blood vessels. Death by overdoses on meth is extremely rare, but heavy users face other risks. Death as a consequence of methamphetamine use is most likely to occur in one of three ways: heart attack, heat stroke, or suicide. Heart attacks occur when the constricted blood vessels slow the flow of blood and force the already rapidly beating heart to work harder. For those with healthy hearts this is generally not a problem, but any weakness in the heart or the arteries flowing from the heart may prove fatal. Constricting blood vessels

inhibits the ability of the body to carry away excess heat and increases the chance of heat stroke. Finally, the depression that may follow as the effects of meth wear off increases the risk of suicide.

Appetite

Methamphetamine suppresses the appetite, but in some unusual ways. For example, the reduced appetite and corresponding weight loss only lasts for about 30 days unless the user continually increases the dose. The emaciated figures shown in some anti-meth ads represent those whose use has spun out of control. This loss of appetite is unusual in another way. Individuals who fast generally find their stomachs shrink, so that when they resume eating they feel full after consuming a relatively modest amount of food. In contrast, meth users whose appetites have been diminished often experience a ravenous hunger when their use stops. Sheriffs have complained that the high volume of food consumed by jailed methamphetamine users make them markedly more expensive to feed than other inmates. Finally, the effects of meth on appetite appear to vary from one animal species to another, suggesting the findings from animal studies of the effects of meth may not always apply to humans. It is unknown how many of meth's other effects vary by species, an important omission given that animal studies are often key to understanding the effects of drugs on humans.

Psychosis

Any CNS stimulant can induce psychosis, but because methamphetamine is much more potent than most stimulants, psychosis can easily accompany heavy use. Psychosis is a mental state in which the individual loses full contact with reality. Methamphetamine-induced psychosis has symptoms much like those of paranoid schizophrenia and may include: paranoia, delusions of persecution, delusional thinking, and/or visual, auditory, and olfactory hallucinations. Symptoms may also include ideas of reference, the false belief that others are talking about you, such as the belief that a television news report about drugs is specifically talking about you. Users may also believe they can read the thoughts of others. Some develop symptoms in which they do not recognize familiar faces, or in which they think they falsely recognize strangers as friends. They may also see "shadow people," in which they think they see the fleeting shadow of someone from the corners of their eyes – a symptom sometimes experienced by anyone who is deprived of sleep.

Not everyone who uses methamphetamine will develop psychosis, but the heavier the use the greater the likelihood of psychosis and the more severe the symptoms. In most cases the user recognizes that such symptoms are caused by the drug and does not act upon them. Extreme users, however, may lose sight of this connection. For most users the symptoms of psychosis go away as the effects of the drug wear off. However, for those with pre-existing psychological problems the symptoms may

continue for much longer, sometimes a year or more. Ironically, one study found that more than a quarter of meth users used the drug “to cope with mental illness, distress, or trauma” (von Mayrhauser, Brecht, and Anglin 2002, p. 53). Their study included one subject who specifically used methamphetamine to self-medicate for paranoid schizophrenia.

Stereotyped behavior

Also known as tweaking or punding, stereotyped behavior takes the form of repetitive compulsive behavior (Ridley and Baker 1982). This may involve taking things apart – stereo equipment, automobiles, computers – to their smallest components without any idea of how they are to be re-assembled. Stereotyped behavior might also include picking at the skin until open sores develop in an effort to get at the “meth bugs” they feel on their arms or face. It might include spending hours looking for some lost item, such as an old photo, or staring at the stars and counting them for hours. Stereotyped behavior often precedes methamphetamine psychosis and, like psychosis, stereotyped behavior generally stops as the effects of the drug wear off.

Meth mouth

Among the disturbing images presented to discourage methamphetamine use are those of users with missing teeth, rotting and infected gums, a condition sometimes known as “meth mouth.” The graphic images suggest this is a typical consequence of methamphetamine use. While meth mouth is real, it usually develops in only the heaviest users and is a consequence of the interaction of five things: (a) Dry mouth resulting from the constriction of blood vessels in the mouth. This makes saliva more acidic thus damaging tooth enamel while facilitating the growth of bacteria. (b) Consuming large amounts of sugar-filled soft drinks in response to dry mouth. The soft drinks are themselves often acidic and the sugar further feeds bacteria in the mouth. (c) Grinding of the front teeth. (d) Grinding or clenching of the rear teeth. This grinding can continue for as long as a month after meth use stops. (e) Poor dental hygiene. Those who use high doses of the drug for long periods of time often don't think about personal hygiene. Making matters worse, as decay and infections set in, brushing becomes increasingly uncomfortable.

Methamphetamine and children

While adults have some control over their exposure to drugs, for children it is a different matter. The issue is whether there are short-term and long-term effects of maternal methamphetamine use during pregnancy. Documenting the effects of maternal meth use during pregnancy on the developing fetus is challenging because

other factors come into play. Most of these women are poly drug users. In particular, a majority of pregnant methamphetamine users also use tobacco and alcohol, both of which have been linked to inhibiting fetal development. These women are often reluctant to enter or stay in treatment. In addition, pregnant methamphetamine-using women are less likely than other pregnant women to visit a doctor during their pregnancy and are likely to adopt poor nutritional habits. The research presents mixed findings. Piper et al. (2011) found that among 7–9 year olds, meth-exposed children were more likely to perform below grade and to be diagnosed as ADHD. Longitudinal research in Sweden found that by age 14 meth-exposed youth performed more poorly in school than others their age (Cernerud et al. 1996). Studies that find problems in meth-exposed youth tend to base that conclusion on comparisons with other youth in general, not taking into account the very different social environments of the two groups.

There is also the question of whether ADHD stimulant use in children influences later stimulant abuse. The link between stimulant use as a treatment for ADHD and subsequent drug use has yielded counterintuitive findings. While it is true that youth with ADHD are more likely to subsequently use illicit drugs, ADHD youth who are treated with stimulant medication are substantially less likely to use subsequently use illicit drugs (Wilens et al. 2003).

Perhaps the most convincing argument against serious long-term harm comes from a study of young adults who had been exposed to cocaine in the womb 25 years earlier. Rather than comparing them with a national average, the youth were paired with other youth from the same hospital that served the same segment of the community. In this study, the youth were again found to be slow to develop when compared to a national average. There were, however, no differences between the cocaine-exposed youth and other youth from the same social environment. The authors concluded that any disadvantage experienced by these youth was the product of poverty, not exposure to cocaine in the womb (cited in Fitzgerald 2013). Though not a direct test of the effects of methamphetamine, the findings are suggestive because cocaine and meth are both members of the stimulant family of drugs.

Other physical effects

Methamphetamine has a number of other physical effects on the user. It moderates the effects of alcohol, making alcohol-intoxicated drivers somewhat safer, providing the level of methamphetamine use is not so high that it induces psychosis. It poses a threat to driving behavior in that extreme exhaustion follows as the effects of the drug wear off. Traffic accidents in which the driver has been using meth are often those characteristic of the sleep-deprived driver, such as drifting out of lane. In addition, methamphetamine restores the performance of fatigued military pilots (and presumably civilian truck drivers) to their rested levels, but no better. It does not improve the performance of those who are already rested. And, as will be discussed in the next section, methamphetamine is a powerful sexual stimulant for some users.

Social Effects

Concerns about methamphetamine focus on more than its effects on the body. There are also concerns about the effects of the drug on the behavior of users and the social problems that might be fueled by those behaviors. Included among the areas of concern is the effect of methamphetamine on criminal and sexual behavior. Regarding crime, while the possession, sale, and manufacture of (illicit) methamphetamine are all criminal acts, the larger concern is the effect of meth on violent and property crime.

Meth and violence

Methamphetamine has been around and has been abused for decades, but the perception that it is linked to violence is relatively recent. It was not until the 1970s that researchers began to consider a link between methamphetamine use and violence. Ellinwood (1971) was among the first to systematically document the link between methamphetamine use and homicide, but struggled to find cases supporting such a link. He concluded that where there was a connection it was attributable to three factors: predisposing personality factors, involvement in a drug subculture, and the use of other drugs. Others have supported the notion that predisposing personality factors are important. Sommers and Baskin (2004) conclude that the best predictor of violent behavior by methamphetamine users is evidence of violent behavior that occurred before methamphetamine use began. Methamphetamine users experiencing psychotic episodes may turn to violence in the false belief they are under attack and in imminent danger, but such incidents are rare.

Involvement in the drug subculture is also important. Methamphetamine users experience paranoia while also recognizing the stigma assigned them by nonusers. These factors lead methamphetamine users (or at least the heaviest users) to minimize contact with sober family and friends, surrounding themselves with other users who also experience paranoia. This creates an environment in which mutual suspicion sets the stage for interpersonal tensions that can lead to altercations. Inserting other drugs, particularly alcohol, into the mix only heightens the probability of interpersonal violence. Ultimately, however, methamphetamine's contribution to violence is to enhance pre-existing violent tendencies rather than create them.

If the link between methamphetamine use and acts of violence is uncertain, more clear is the association between methamphetamine use and early childhood experiences of violence or trauma, at least among methamphetamine users who come to the attention of the authorities or treatment providers. Such early childhood experiences might lead one to suspect that methamphetamine users are likely to physically abuse their own children, but this does not appear to be the case. A study of families in which the children were removed because of methamphetamine use by adults in the home found that although children were not usually the targets of violence, they often witnessed acts of aggression between adults (Haight et al. 2009).

Rather than abuse, the children of methamphetamine users are more likely to suffer from neglect. While high, parents who abuse methamphetamine may be focused more on their own needs than on the needs of their children. They are not hungry and so don't think about whether their children might be hungry. They are not tired and so they stay up for hours without thinking about their children's need for sleep. They may not worry about their own basic hygiene and so they don't think about hygiene for their children.

Finally, untangling the methamphetamine–violence nexus is complicated by the use of other drugs, and alcohol in particular. Alcohol is often used by methamphetamine users who wish to end the effects of the drug so they may sleep. Not only is alcohol a fuel for violence itself, but as the effects of methamphetamine wear off the user often experiences irritability. Combining irritability with alcohol can be a volatile mix.

Meth and property crime

There is little research on the connection between methamphetamine use and property crime. It is likely that in most cases methamphetamine users commit property crime for reasons quite similar to those for the users of other illicit drugs, either to support their habit or to sustain themselves after their habit has cost them legitimate employment. There are two circumstances in which methamphetamine users are unique as property offenders. First are anecdotal reports of methamphetamine users engaging in identity theft. Methamphetamine enables them to focus on an otherwise monotonous task for hours, making it possible for them to sort through piles of discarded paper looking for personal information useful for identity theft. While this is a credible scenario and it is possible to cite individual cases, the frequency with which this happens is unknown.

A second situation in which methamphetamine users may have a particular involvement in property crime involves the theft of materials needed to manufacture the drug. As will be discussed later in this chapter, small-scale domestic production utilizes a number of household items, including drain cleaner, lithium batteries, and lantern fuel. The theft of these items may be more likely when stores carefully monitor sales and notify the police of suspicious purchases.

Meth and sex

Methamphetamine's effects result from its release of dopamine, serotonin, and norepinephrine. These same neurotransmitters play an important role in the experience of sexual pleasure. Consequently, a majority of methamphetamine users report an increase in their sex drive while using methamphetamine. While common, such feelings are not universal. About a third of methamphetamine users report no improvement and a small percentage report a decrement in their sex drive. There are

also differences in the way men and women respond. Women are less likely than men to report an increased sex drive, improved sexual performance, or general pleasure from sex while using methamphetamine. The method of use also matters, with methamphetamine injectors experiencing a stronger link between meth and sex than is true for other methods of administering the drug. For some the link between meth and sex is so strong that they come to believe they can never again have sex without methamphetamine. In such cases treatment programs for methamphetamine users must also include components about sexuality.

Sex while using methamphetamine is different from sober sex in a variety of ways. It is also very different from the experience of sex while using marijuana, LSD, or ecstasy. While on those drugs the user tends to be particularly attentive to the wants and feelings of his or her partner. In contrast, those who associate methamphetamine with sexual enhancement are more likely to be self-absorbed during sex, showing little concern for the feelings of their partners. One user described sex while on methamphetamine as “rat brain” sex, reflecting his animalistic concern only with his own feelings. Viewing pornography is common among methamphetamine users and there are reports of use by sex workers as a tool for tolerating the work.

Those who first try methamphetamine, and for those who are periodic users, the pleasure from sex on meth may be extreme. In some cases the pleasure is described as life altering. However, with long-term heavy use the pleasure diminishes while the sexual acts continue, taking on repetitive and compulsive stereotyped behaviors. In some cases users report marathon sex sessions lasting for hours with limited sexual release. Viagra is sometimes used to prolong the activity, but this increases the risk of heart problems. Further, the constriction of blood vessels that accompanies methamphetamine use leads to reduced bodily fluids. Reduced bodily fluids combined with extended sex sessions can lead to raw and sore privates that make participants particularly susceptible to infection and the transmission of viruses.

Those who use methamphetamine to enhance their sexual performance are more likely than those engaging in sober sex to participate in risky sex. This includes sex with multiple partners, sex with strangers, and unprotected sex, each of which increases the risk of HIV, sexually transmitted diseases, and hepatitis. At the same time there is evidence that methamphetamine reduces the effectiveness of antiretroviral drugs used to treat AIDS. While those who consume alcohol may also engage in risky sex, there is a difference with methamphetamine. For the alcohol user risky sex is often unplanned and unintentional. In contrast, methamphetamine users often take the drug specifically so they may engage in risky sexual behaviors they could not bring themselves to do while sober. The likelihood of risky sex is even greater if the individual is using both methamphetamine and alcohol.

In the social science literature there are more articles on the topic of sex than on any other issue related to the use of methamphetamine. Among those articles, the overwhelming majority are about sex and methamphetamine use by gay and bisexual men (cf. Weisheit and White 2009; Halkitis 2009). The reasons for this are not clear, but it is likely the result of a combination of factors. First, there is concern about the spread of HIV and other sexually transmitted diseases. This makes the subject

worthy of study from a public health standpoint, while also making external funding for research on this group of methamphetamine users more likely. Second, and probably more important, is pragmatism. Most researchers are in urban areas and within urban areas the easiest group of sexually active methamphetamine users to access are those attending gay clubs, making the clubs practical sites for subject recruitment. The result is that studies of the link between methamphetamine and sexual behavior tend to over-represent urban (single) gay males who frequent gay bars. It seems unlikely that this is a representative group of homosexual methamphetamine-using adults and may substantially overstate such things as the frequency with which gay male methamphetamine users engage in sex with strangers or in other forms of risky sex.

For those in the gay community who use illicit drugs, methamphetamine has a stronger positive association with sex than is true for either cocaine or heroin (Halkitis 2009). Studies of methamphetamine use among men who have sex with men suggest there are specific areas of concern with this group. Research subjects report high levels of risky sex, including health risks and risks to personal safety. These risks include sex with strangers, multiple partners, sex without protection, and anal receptive sex. A study of methamphetamine users in treatment found that gay males had 13 times as many sexual partners as heterosexual males or females, and about two-thirds of gay males in the study were HIV-positive while none of the heterosexual males or females were reported to be HIV-positive (Twitchell et al. 2002). When condoms are used the failure rate is high, due to the dryness from constricted blood vessels and the aggressive nature of the methamphetamine user, who is energized by the drug. Further, the practice of meeting anonymous partners online and having them come to the user's residence increases the risk of harm to personal safety.

The failure to use protection and engaging in risky sexual behaviors have been attributed to several factors. Among men who have sex with men there are reports of "safe sex burnout," the belief that they will eventually acquire HIV regardless of the precautions they take and the belief that new antiretroviral drugs will mean that HIV will no longer be a death sentence. In addition, methamphetamine has been linked to impulsivity among users, and methamphetamine often produces in its users a sense of invulnerability (Halkitis 2009). Sex by long-term methamphetamine users may take on a compulsive quality while they also find it difficult to achieve a full erection, leading them to engage in multiple episodes of anal receptive sex with anonymous partners (Frosch et al. 1996). Those who inject methamphetamine are even more likely to engage in risky sex behaviors, and adding alcohol or Viagra® to the mix increases the likelihood of risky behaviors.

Perhaps the best way to summarize the effects of methamphetamine on behavior is to suggest that methamphetamine enhances existing urges rather than drawing out behaviors that are completely out of character. Violence is most likely to emerge from those meth users with pre-existing tendencies toward violence. Heightened sexual activity is most likely to emerge from meth users who already have strong sexual urges, and risky sex is most likely among those predisposed to engaging in risky sex.

Making Methamphetamine

Methamphetamine has been in existence since 1893, but for most of its history in the United States it was legally manufactured. The first evidence of illicit manufacturing was in 1962 or 1963 in San Francisco, after the state of California banned the sale of injectable Methedrine, the trade name for legally manufactured methamphetamine (Weisheit and White 2009). Illicit methamphetamine production increased on the West coast of the United States through the 1970s and 1980s, and by the 1990s began working its way eastward. Most illicit laboratories were small scale, although outlaw motorcycle gangs were thought to operate some larger operations. By the late 1990s and early 2000s the number of seized laboratories was so large that it became cause for national concern. Methamphetamine was probably used in many communities long before laboratories were discovered there, but the presence of methamphetamine laboratories made it impossible to ignore the presence of the drug.

From the perspective of the drug trafficker, methamphetamine has clear advantages over such plant-based drugs as heroin or cocaine. It is relatively easy to make. More importantly, production can be close to the point of sale, thus lowering transportation costs, reducing the need for many levels of organization, and reducing the risk of interdiction or lost shipments. Unlike plant-based drugs, there is no need for delays while the plants mature. In addition, weather and soil conditions are no longer issues, nor does meth require the physical space needed for cultivating plants.

Ways of manufacturing

There are a variety of ways to manufacture methamphetamine. The methamphetamine molecule comes in two forms, *l*-methamphetamine and *d*-methamphetamine, representing left and right versions of the molecule. The two versions are mirror images but are different in their actions, much as a person's right and left hands are mirrors but are not identical. The *d*-methamphetamine (right version) is the illegal substance methamphetamine, whereas *l*-methamphetamine (left version) is a considerably milder form of the drug that is not regulated and is found in some over-the-counter vapor rubs. The distinction between *d*- and *l*-methamphetamine is relevant when talking about methods of manufacturing.

Those involved in the process of manufacturing methamphetamine are sometimes called "cooks," perhaps because they often work from a recipe. There are three main ways in which methamphetamine can be manufactured: the Phenyl-2-Propanone (P2P), the Red-P, and the Birch or Nazi methods (Weisheit and White 2009). The P2P method, as depicted in the television series *Breaking Bad*, uses P2P, methylamine, hydrochloric acid, and mercury. It was commonly used until 1980, when P2P was restricted by the DEA. The method is time consuming and relatively complex, ill-suited to anyone without a background in chemistry. It is, however, suited to those wanting to make large amounts of the drug. The disadvantage of the P2P method is that it yields methamphetamine of lesser purity. This

is because the method produces what is known as a racemic mixture, a 50:50 mix of *d*- and *l*-methamphetamine. The P2P method also produces a strong odor of cat urine.

After access to P2P was restricted, methamphetamine cooks turned to one of two methods based on the precursors ephedrine or pseudoephedrine. These methods were relatively easy to do with little or no training in chemistry. The laboratories using these methods often made smaller amounts of meth, enough for the cook and his or her friends. These labs have been given a number of labels but are often called “mom-and-pop” labs.

The Red-P method became popular in the western United States in the early 1980s and utilizes red phosphorous (taken from matchbook striker plates or flares), iodine, and hydriotic acid. The process is so simple that it can be done by someone with almost no knowledge of chemistry and the final product can be 95% pure or more. Ironically, one byproduct of the Red-P method is P2P as an impurity. The Red-P method is not without risks. In crystal form iodine can cause chemical burns and respiratory problems; it can ignite or cause explosions when mixed with other combustibles or reducing agents, such as phosphorous. In addition, the Red-P method can produce phosphine gas, a highly toxic odorless and colorless gas sometimes used in agriculture as a grain fumigant to kill rodents and insects.

A second ephedrine/pseudoephedrine-based method of methamphetamine production is known as the Birch method, after the Austrian chemist who published an article describing the process in 1944. It is also known as the Nazi method, although the origins of this moniker are in dispute. Some claim it was the process used by the Nazis during World War II, while others claim a college student in Missouri copied the recipe onto a sheet of paper with Nazi swastikas in the margins. The Birch method is relatively easy to do and utilizes anhydrous ammonia, lye, and a flammable solvent such as paint thinner or lantern fuel. As with the Red-P method, the final product can be highly pure, depending on the skill of the cook. The method is one for which there is a risk of fires or explosions. Further, anhydrous ammonia is dangerous for those untrained in its handling. In its natural state anhydrous ammonia is a gas. When stored under pressure it turns to a liquid state. It is also hygroscopic. That means it seeks water from the nearest source. For humans that means the eyes, throat, skin, and lungs. If anhydrous ammonia comes into direct contact with the human body it will burn its way into the body until it runs out of moisture or until it is diluted with water. The resulting burns are much like the burns from dry ice.

Manufacturing methamphetamine using either the Red-P or Birch methods is relatively safe, provided it is done by trained chemists with known qualities of chemicals and in well-equipped laboratories. None of these conditions usually exist in small mom-and-pop laboratories. The ease with which methamphetamine can be made using ephedrine-based methods means that individuals with no training in chemistry can undertake the process and their “laboratories” leave much to be desired. Under these conditions the risks of fires, explosions, and chemical burns to the meth cook are considerable. Further, for both methods each pound of methamphetamine produced yields as much as five pounds of toxic waste. This waste is

almost never disposed of in an environmentally safe way, contaminating soil and working its way into underground water supplies.

Many methamphetamine cooks are of child-bearing age. Consequently it is not unusual to find young children living in homes in which methamphetamine is being made. This poses a health risk for those children. In addition to the risk from fires and explosions, during the making of methamphetamine a portion of the drug is released into the air in aerosol form. This leaves traces of the drug in carpeting, drapes, or other porous surfaces. This is a particular concern for infants who may crawl on the floor and subsequently place their hands in their mouths. Further, the younger the child the more time they spend in the home and the greater their level of contamination.

Police are trained to respond to crime, not to change diapers or undertake other child-care responsibilities. In recognition of this, many states now have drug-endangered children protocols, detailing which agencies are to be involved and outlining their duties when children are found in a home in which methamphetamine is manufactured.

Although methamphetamine is easy to produce using the ephedrine-based methods, some training is required. No one is born with the innate knowledge of how to manufacture methamphetamine. There are books and numerous online recipes, but for many who are untrained in chemistry (the typical meth cook), these sources may be too advanced. Available evidence suggests that most methamphetamine cooks learn the process directly from others who are manufacturing the drug (Wells and Weisheit 2012). Someone who wishes to learn how to make methamphetamine may provide a cook with precursors in exchange for lessons, may pay for the instruction directly, or the lessons may be provided strictly out of friendship. Books and Internet recipes appear to play a minor role in spreading knowledge about the manufacturing process.

Methamphetamine is a drug that makes the user feel good, strong, and empowered. Becoming a methamphetamine cook is one way to facilitate access to the drug. In addition, being a methamphetamine cook, particularly a cook who produces highly pure methamphetamine, is rewarding and empowering. The very process is enticing to many and serves as an outlet for stereotyped behavior. In addition to the intrinsic rewards of becoming an accomplished meth cook, there are also extrinsic rewards. Among meth users the skilled cook has considerable prestige. As one female methamphetamine user reported, "Cooks are like gods. I mean everyone does whatever they can to keep the cook happy. Food, stereos, supplies, sex, whatever they want they got" (Jenkot 2008, p. 674). These intrinsic and extrinsic rewards complicate efforts to keep people from entering methamphetamine production, or from returning to production after they have been caught.

Responding to the problem

Because they are easy to do, ephedrine-based methods are popular among small-scale producers. Large-scale producers in Mexico also used the ephedrine-based methods until the Mexican government increasingly limited access to ephedrine.

In July of 2008 Mexico completely banned ephedrine and pseudoephedrine. Following this, Mexican methamphetamine manufacturers returned to the P2P method (Cunningham et al. 2013).

By the late 1990s and early 2000s methamphetamine producers within the United States were often small-scale producers wedded to ephedrine-based methods. This led to a series of restrictions on access to ephedrine. Most notable was the Combat Methamphetamine Epidemic Act of 2005, which required ephedrine products be sold from behind a counter with the purchaser showing ID, signing for the purchase, and with strict limits on the amount that could be purchased each month. Some states further restricted access to ephedrine by requiring a doctor's prescription for ephedrine products. These restrictions did not end access to methamphetamine, nor did they end methamphetamine production within the United States.

Unintended consequences

As so often happens in the world of drug policy, solutions to one aspect of the drug problem create problems of their own. Restricted access to ephedrine did appear to reduce the number of larger mom-and-pop laboratories in the United States. However, the desire for methamphetamine continued and was met through two adaptations to these restrictions: an increase in methamphetamine produced and distributed through large drug-trafficking organizations, based primarily in Mexico, and an increase in the number of very small domestic methamphetamine laboratories, sometimes called "one-pot labs."

Prior to national restrictions on ephedrine, domestic methamphetamine laboratories were usually small but large enough to supply the cook and his or her friends. There was not much of a market in the traditional sense. Instead, much of the methamphetamine was produced and distributed within small groups who relied on barter rather than cash. For example, the cook might require one friend to acquire ephedrine in exchange for a portion of the final product, while another friend might be required to obtain the lithium batteries required for the process. Under this system, violence from the business of methamphetamine was uncommon (though domestic violence unrelated to the drug business was often an issue). There was little fighting over turf, and because only limited amounts of cash were involved the cooks weren't getting rich. Unlike seizures of heroin or cocaine, police seldom found much cash or valuable property to seize from these mom-and-pop methamphetamine cooks. Instead, police were often left with the trouble and expense of cleaning up a toxic waste site.

With limitations on the amount of ephedrine that could be purchased, those who continued to manufacture the drug in small labs often turned to an even smaller production method, the so-called "one-pot" method. Rather than a laboratory that might occupy a kitchen or even the trunk of a car, the one-pot method produces a small amount of methamphetamine in a one- or two-liter plastic bottle. Rather than the four to eight hours required by larger labs, the one-pot method only requires about

an hour to complete, but yields a relatively small amount of finished product – only a dose or two. It is sometimes called the “shake and bake” method because the chemical reaction is facilitated by shaking the bottle, rather than by heating the chemical mixture with an open flame or other direct heat source. Rather than stealing and handling liquid anhydrous ammonia, the one-pot method utilizes ammonium nitrate found in cold packs. These cold packs can be purchased in most grocery stores or pharmacies. Although a smaller operation than its predecessor, the one-pot method poses its own risks. The chemical reaction inside the plastic bottle generates heat and pressure. If there is a weak spot in the bottle a pin-hole-size opening can shoot out a flame much like that from a blow torch, posing a serious hazard to anyone near the bottle. And, there is still the issue of toxic waste when the process is finished.

Limiting access to ephedrine without diminishing the desire for methamphetamine has also facilitated the rise of large-scale methamphetamine production and distribution operations, often carried out by the same Mexican drug organizations that import and distribute cocaine, marijuana, and heroin. Unlike the small mom-and-pop operations, these organizations are run like a for-profit business with a multilayered organizational structure that generates large amounts of cash. While the environmental damage from methamphetamine production is no longer an issue, at least within the United States, this model is associated with the same social problems linked to the distribution of other drugs by these organizations: violence, turf battles, and street crime. To the extent that methamphetamine is produced and distributed through these organizations there is also a likely impact on public perceptions of the problem. When small mom-and-pop operations leave behind meth trash, fires, and explosions it is difficult to deny that methamphetamine is present in a community. However, large-scale drug-trafficking organizations don't leave these visible reminders in the communities in which the drug is eventually consumed. As a result, it is easier for residents and officials in those communities to deny, downplay, or even be unaware of the drug's presence.

The future of methamphetamine production

Predicting future patterns of any illicit drug is a risky proposition, much like predicting the future of fashion. Nevertheless, it seems clear that methamphetamine and methamphetamine production are here to stay, although the levels of use and production may fluctuate over time. As noted above, as a product of a laboratory methamphetamine production has clear advantages over the production of plant-based drugs. One advantage is that banned or restricted precursors can themselves be manufactured. The United Nations' *World Drug Report* indicates “Traditional precursors are being replaced with alternate precursors and chemically modified precursors that are not under international control” (p. 53). The report cites the example of the restricted precursor P2P, which is now being converted from an unregulated substance, *Alpha*-phenylacetonitrile. Other sources suggest recipes for creating ephedrine using legally available ingredients. In addition, new drugs

with characteristics similar to methamphetamine might be discovered. In short, law enforcement has the challenge of keeping up with the creativity of highly motivated chemists.

Conclusion

Worldwide, among illicit drugs stimulants are second in popularity only to marijuana, and among stimulants methamphetamine is increasingly popular. For many users methamphetamine makes them feel intense pleasure, powerful, energetic, and invincible. The drug can help its users overcome feelings of depression, and it can take users to heights of sexual pleasure they had not previously known. It can give them the energy to work long hours in tedious jobs. Methamphetamine is a drug well suited to a modern industrial society in which achievement and productivity are emphasized, as well as in countries with emerging economies in which individuals may be expected to work long hours for low pay. It also fits well in modern societies in which people are encouraged to believe that any discomfort or unpleasant feelings can be ameliorated by a medicine. Unfortunately, the same positive feelings and enhanced energy that can improve productivity and one's sense of well-being can be alluring and the user can easily fall into patterns of abuse, leading some to label methamphetamine "the most dangerous drug on earth."

Methamphetamine production is also well suited to the modern world, and in particular to modern patterns of drug distribution. It can be made in small batches by independent producers as well as in large-scale operations run by multinational drug-trafficking organizations. Methamphetamine can be made quickly with an enormous profit margin, and the precursors themselves have become valuable commodities. What will happen with methamphetamine production in the future is difficult to know, but the drug is an ideal candidate for insurgent groups or private armies seeking to quickly raise money to support their efforts. As methamphetamine use and production continues to expand into more countries it will likely be increasingly difficult to control. Production and trafficking will likely shift to countries where there is the most corruption and where government controls are weakest.

It has been argued elsewhere that the urge to alter consciousness may be universal, citing as partial evidence that in every known society children enjoy spinning around until they are dizzy. Similarly, riding a roller coaster serves no other function than to alter consciousness. If altering consciousness is indeed a universal human urge, then the quest for a drug-free society is futile. What can be pursued, however, is the quest for a society in which altering consciousness is done in a way that least harms society and the individual. Methamphetamine is a drug that can make positive contributions to society, whether it is through increasing productivity, treating ADHD, or improving the health of the morbidly obese. At the same time, methamphetamine can wreak havoc on individuals and communities. The drug will not go away. There are too many forces aligned in its favor. The challenge will be to find a way to maximize the benefits of methamphetamine while minimizing destructive patterns of use.

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Prescription Drugs

Brian C. Kelly and Mark Pawson

Epidemiology and Trends of Prescription Drug Misuse

Prescription drug misuse has emerged as a significant problem during the twenty-first century; this trend has been particularly prevalent among young adults (Kelly et al., 2013; McCabe, Teter, and Boyd, 2006), but ultimately extends to a wide segment of the population. In 2012, over 16.7 million Americans reported the misuse of prescription drugs during the previous year (SAMHSA, 2013). Furthermore, the lifetime prevalence of prescription drug misuse among Americans is greater than that for most illegal drugs; only marijuana has been more widely used than prescription drugs among Americans over the age of 12 – over 50 million people reporting prescription drug misuse in all (SAMHSA, 2013). Further, while the overall prescription drug trend has plateaued in the United States during the past several years, misuse remains a significant problem among Americans, and it has become a more significant global drug trend (Harwood and Bouchery, 2004).

Prescription drug misuse – defined by Compton and Volkow (2006, p. S4) as “any intentional use of a medication with intoxicating properties outside of a physician’s prescription for a bona fide medical condition, excluding accidental misuse” – has risen significantly during the past decade. It is relatively recently that rates of prescription drug misuse among many segments of the US population have grown exponentially. During 2000, an estimated 8.7 million Americans aged 12 and older used prescription drugs nonmedically within the previous year. By 2010, this had increased to over 16 million Americans; this figure has remained relatively stable since that point. As noted above, the nonmedical use of prescription drugs was among the most widespread drug problems in the United States. This highlights

the continued growth of the problem and the significance of prescription drugs in the US drug landscape.

Prescription drug acquisition among misusers functions somewhat differently than for illicit markets. The vast majority of individuals who misuse prescription drugs acquire them from a doctor or through their family and friend networks. Less than 5% of those reporting the misuse of pain relievers indicated that they had purchased these drugs from a drug dealer or the Internet (SAMHSA, 2013). In this regard, social networks are a key driver of the prescription drug misuse problem, rather than a major illegitimate drug market. This aspect makes the prescription drug problem distinct from illicit drugs.

Differences in Prescription Drug Misuse

The misuse of prescription drugs is also not evenly distributed across the population. As noted above, young people are particularly at risk of prescription drug misuse, and we describe several “at-risk” populations later in this chapter. But there are also personal characteristics that explicate differences in rates of prescription drug misuse. Below, we provide a brief description of the influence of gender, sexual identity, and race/ethnicity on patterns of prescription drug misuse within the United States.

The role of gender

Gender has proven to be a significant influence on substance use in a wide variety of ways. Given higher rates of opportunities to use drugs, studies have found males to be more likely to use illegal drugs (Etten, Neumark, and Anthony, 1999) and rates of abuse and dependence for men are significantly higher than those of women (SAMHSA, 2013). In this regard, it is quite common to find men more likely to use drugs and in greater quantities in comparison to women. However, some studies indicate that women are more likely than men to misuse prescription drugs (Green et al., 2009; Simoni-Wastila, Ritter, and Strickler, 2004; Simoni-Wastila and Strickler, 2004). When examined by specific prescription drug categories, McCabe et al. (2006) found that women were significantly more likely to abuse opiate painkillers, sedatives, and sleep aids, while men were significantly more likely to abuse stimulants. Other studies, however, have found significantly higher rates of prescription opioid misuse among men (15.9% for men versus 11.2% for women), but among those who reported past-year use, levels of dependence for men and women were equal (Back et al. 2010). In addition, a recent study of prescription drug misuse among young adults found no significant difference between men and women (Benotsch et al., 2011).

Some assert that women may be more likely to misuse prescription drugs because they are more likely to be prescribed abusable forms of prescription drugs (Simoni-Wastila, 2000). In this regard, women have greater access should they want to misuse prescription drugs. Because of their differential rates of access, women may be more

likely than men to use certain drugs, namely painkillers and sedatives (Simoni-Wastila, Ritter, and Strickler, 2004). For example, women are 48% more likely than men to have received abusable medications in the past year ((Simoni-Wastila, 2000), and their odds of past-year misuse of prescription drugs are correspondingly 43% greater than that of men (Simoni-Wastila, Ritter, and Strickler, 2004). Among adolescents, the percentage of girls abusing or dependent on prescription painkillers has been found to be almost double that of boys; however, by the time they enter into the emerging adult age range of 18–25, these rates equalize as female rates decrease more dramatically than male rates (Colliver et al., 2006). Thus, while misuse may initially be higher among females, males may have faster-growing rates of misuse as they age into adulthood. From 2008 to 2009, rates of misuse for prescription psychotherapeutics, pain relievers, stimulants, and sedatives increased for men but not for women (SAMHSA, 2010). Despite these potential gender differences in the rates of prescription drug misuse, data suggest that men are equally likely to mention nonmedical use of prescription drugs during visits to emergency room (ER) departments (SAMHSA, 2008). Thus, the influence of gender is both complex and dynamic, and it changes over time as people age.

Sexual identity

Beyond gender, sexual orientation may also influence patterns of prescription drug misuse. Many studies have documented higher rates of substance use in general by sexual minority individuals compared to their heterosexual counterparts (Corliss et al., 2010; Hughes and Eliason, 2002; Ryan, Huggins, and Beatty, 1999). Compared to their peers who identified as completely heterosexual, those who identified otherwise reported greater use of marijuana, illicit drugs, and prescription drugs (Corliss et al., 2010). Furthermore, among females, sexual minority women, especially bisexual women, had higher risk for use of every category of drug, including prescription drugs. These findings also highlight the interaction of age along with gender and sexuality; past-year prescription drug misuse for 18–23-year-olds was lower than those for 12–17-year-olds among bisexuals and lesbians/gays (male and female), but higher for those who identified as “mostly heterosexual” (Corliss et al., 2010).

High levels of prescription drug misuse among gay men raise particular concerns because of their association with other risk behaviors (Benotsch et al., 2011; Kelly and Parsons, 2013). Indeed, certain types of prescription drug (such as erectile dysfunction medications, described in detail below) are especially relevant for the sexual health of sexual minority men. Overall, gay men who report recent prescription drug misuse are more likely to report other illicit drug use and higher rates of unprotected casual sex (Benotsch et al., 2011). In addition, college-based studies show that young gay and bisexual men are less likely to drink than their heterosexual peers, but more likely to use other drugs (McCabe et al., 2003). In a study of urban club-going young adults, sexual minority young adults were more likely to report the use of ecstasy, cocaine, and methamphetamine than their heterosexual

peers (Kelly, Parsons, and Wells, 2006). Many of these findings parallel prescription drug misuse among sexual minority youth and adults (Kelly et al., 2013).

Race/Ethnicity

Finally, research suggests different racial/ethnic groups have distinct profiles of risk behavior associated with prescription drug misuse (Harrell and Broman, 2009). This coheres with findings on racial and ethnic differences in substance use more generally. College student samples have found that rates of prescription drug misuse are highest among whites (McCabe, Knight et al., 2005). In particular, research indicates that whites abuse prescription stimulants at higher rates (Kroutil et al., 2006), and this may be due in part to the fact that whites are much more likely to be prescribed stimulants by physicians (McCabe, Knight et al., 2005). National studies indicate that past-year misuse of any prescription psychotherapeutic drug was higher among whites than blacks, Asians, or Hispanics (Colliver et al., 2006). While white young adults have the highest rates of prescription drug misuse, rates among African Americans have increased more quickly in recent years (McCabe, Cranford, and West, 2008). Thus, studies generally indicate that prescription drug misuse is a greater problem among white Americans.

Types of Prescription Drugs of Misuse

The effects and consequences of prescription drug misuse depend on the specific class of drug. Based upon previous research, there are five primary classes of prescription drugs related to the growing problem of misuse: narcotic analgesics, depressants, stimulants, erectile dysfunction medications, and selective serotonin reuptake inhibitors. The patterns of misuse and consequences are wide-ranging across these prescription drug types.

Narcotic analgesics – The abuse of narcotic analgesics, particularly opioid painkillers, is of great concern to health care professionals, public health practitioners, and substance abuse treatment specialists. These drugs – which include Vicodin, OxyContin, Percodan, and codeine – have surged exponentially during the twenty-first century and have quickly become among the most significant drug problems (SAMHSA, 2013; Johnston et al., 2006). The surge in the misuse of prescription opiates in recent years has created an additional burden on the treatment system (Cicero, Inciardi, and Munoz, 2005). However, because of the competing needs of treatment for pain patients and the need to reduce misuse of an addictive substance, the policies surrounding opiates are complex (Zacny et al., 2003). In addition, prescription opiate misuse patterns remain diffuse and widespread, and have nationwide significance (Cicero et al., 2005).

The abuse of opiates is significant for many reasons. First, given the propensity toward polydrug use among many drug users, prescription opiates pose significant

risks for overdose when used in combination with alcohol or other drugs. They pose acute risks in individual instances of use. Second, prescription opiates may produce long-term problems related to addiction. Opiates are arguably the prescription drugs with the greatest potential for addictive patterns of use given their propensity to induce physiological dependence with prolonged use (Zacny et al., 2003; Senay et al., 2003; Adams et al., 2006). Thus, individuals who begin misusing prescription opiates for pleasure or recreational purposes may ultimately develop lasting problems of dependence. In addition, the misuse of prescription opiates is cause for concern because these individuals may “graduate up” to heroin as their dependence on opioids develops. In this manner, prescription opiate misuse may be a pathway to heroin use.

Depressants

Prescription sedative misuse has been a problem for decades, likely because they are among the most widely prescribed controlled substances. Of particular concern are benzodiazepines (de las Cuevas, Sanz, and de la Fuente, 2003), such as Valium and Xanax, which are used medically to treat anxiety and insomnia, two of the most common problems for which patients seek medical treatment. Yet, these drugs also produce physiological dependence (Pelissolo and Bisserbe, 1994). Among patients taking benzodiazepines for medical purposes for at least one month, almost half (47%) become dependent (de las Cuevas et al., 2003). Thus, individuals who misuse benzodiazepines for recreational purposes may be similarly susceptible to dependence. Beyond the use of benzodiazepines, individuals may also misuse other sedatives, such as prescription sleep aids, in order to counteract the effects of other drugs to help them fall asleep. The risks associated with such polydrug use remains of considerable concern to health professionals. However, the nonmedical use of sedatives account for over one-third of all prescription-drug-related mentions during ER visits (OAS, 2006).

Stimulants

The misuse of prescription stimulants has become of particular concern because of the significant growth of prescriptions for drugs such as Ritalin and Adderall for the treatment of ADHD (Robison et al., 1999). Thus, the potential for the diversion and misuse of prescription stimulants is particularly great, especially among youth. Indeed, 18- to 25-year-old Americans are most likely to misuse stimulants – approximately four times more so than those over 25 – and in particular most likely to abuse stimulants prescribed for ADHD (Kroutil et al., 2006). The misuse of ADHD-related stimulants is particularly high among college students (Low and Gendaszek, 2002; Teter et al., 2005; Teter et al., 2006), though many youth initiate their misuse while under the age of 18 (McCabe et al., 2004).

Prescription stimulants also fit into many aspects of nightlife involvement as they function in similar fashion to stimulant “club drugs” such as cocaine and methamphetamine. In such circumstances, individuals may crush and snort prescription stimulants in conformity with other patterns of stimulant use (Garland, 1998; Jaffe, 1991). Research suggests a wide range of motivations for misusing stimulants, including getting high, increasing energy and alertness, increased productivity and concentration, and counterbalancing the effects of other drugs, among other things (Teter et al., 2005).

Erectile dysfunction (ED) medications – ED medications have been misused to facilitate sexual encounters for men who do not suffer from erectile dysfunction. In these instances, healthy men may consume ED medications to enhance their feelings of sexual prowess, increase their ability to engage in repeated sexual acts, or when the use of other drugs impacts sexual functioning. As noted above, this phenomenon has particularly occurred among sexual minority men (Benotsch et al., 2011; Chu et al., 2003; Purcell et al., 2005). The misuse of erectile dysfunction medications is especially of concern within this population as studies have indicated that ED medication misuse may increase sexual risk behaviors and influence risk for HIV transmission (Mansergh et al., 2006; Pantalone, Bimbi, and Parsons, 2008; Sherr et al., 2000). Yet, at the same time, many men cite the impairing effects of condoms as a motivation for misusing ED medications, which indicates that these drugs may enable condom use among some sexual minority men (Pantalone, Bimbi, and Parsons, 2008).

Selective serotonin reuptake inhibitors (SSRIs)

Some individuals who are not depressed may consume SSRIs without a prescription to feel “better than well.” SSRIs are also of concern because of their combination use with ecstasy. Ecstasy users sometimes take SSRIs such as Prozac to ameliorate the side effects of ecstasy use. These practices, called “pre-loading” or “post-loading” in reference to the ingestion of SSRIs prior to or in the wake of ecstasy use, are engaged in to reduce or eliminate the post-ecstasy crash and potentially impede the long-term negative effects (Kelly, 2009). Beyond questions about the efficacy of this practice, it remains unclear as to whether this practice could in fact place youth at greater risk for negative outcomes.

Difficulties Managing Prescription Drug Misuse Problem

Adapting to the prescription drug problem has presented challenges for clinicians, researchers, and law enforcement officials given that there remain distinctions between these substances and those rendered illegal and limited to the black market. One issue that has been contested is simply one of terminology. The term “misuse” has emerged among scholars and clinicians alike to account for the fact

that individuals are not simply “using” prescription medications – such use is outside the bounds of those identified within the medical system – and yet the term also avoids the presumption of harm and dependence with which the term “abuse” is laden. As such, many scholars increasingly utilize the term “misuse” so as to distinguish these patterns of prescription drug consumption from medical “use,” but yet not pathologize the individuals who consume them nonmedically with the term “abuse.” The term “misuse” accounts for the wide range of nonmedical uses for these substances, whether it be recreational use of these drugs, managing addiction developed through legitimate use, or using pills obtained from nonmedical sources.

A key problem with prescription drug misuse is that users may perceive these substances to be safer than illicit drugs because they are prescribed by physicians for medical problems. Yet, a host of concerns exist for these substances. First, many of these substances may also be highly addictive. Second, these drugs are not safer than illegal drugs; one can overdose on many of these prescription drugs (see below). Finally, polydrug use has been associated with heightened risk for accidental overdose, even via combinations with legal substances or legitimately prescribed medications. For example, the combination of alcohol and benzodiazepines can lead to heightened risk for overdose. Furthermore, prescription drug misusers are unlikely to be fully aware of the contraindications or interactions with other drugs. Thus, while these substances all have valuable medical uses, they can lead to problems equally as serious as those from illegal drug use.

As described above, a range of prescription drugs are used nonmedically. Although considerable efforts have been made to reduce the misuse of all prescription drug classes, the misuse of opioid painkillers is of especially great concern to health care professionals, public health practitioners, and substance abuse treatment specialists. The misuse of this particular class of drugs – which include commonly prescribed medications such as Vicodin, OxyContin, and codeine – has surged exponentially during the twenty-first century, quickly becoming among the most significant drug problems in the United States. This surge in the misuse of prescription opiates has created an additional burden on the addiction treatment system (described further below). While prescription opioids are the substances most concerning with regard to drug dependence, individuals may also develop dependence on sedative drugs, particularly benzodiazepines, and stimulant drugs.

Because of the competing needs to properly treat patients and to reduce misuse, abuse, and dependence on prescription drugs, the policies surrounding these substances are highly complex and often politically charged. These medications cannot simply be rendered illegal in order to inhibit access to those who misuse them. There are many people who depend upon these substances, such as pain patients need for effective pain relievers, for their care and to attain a decent quality of life while living with chronic conditions. This inhibits drug control strategies that are applied to illegal drugs and makes it more difficult to police the misuse of these substances.

Potential Harms and Risks

Prescription drug misuse has not only emerged as a significant recent drug trend, but has created substantial problems for the health care sector and drug treatment facilities. Studies suggest that a range of negative health effects are associated with prescription drug misuse, including cognitive impairment, mental health problems, overdose, and organ damage (Caplan et al., 2007; Teter et al., 2010). There are a variety of ways that the misuse of prescription drugs can cause harm to the user.

Overdose

Prescription drug misuse burdens the health care system, including via the risk of overdose. Prescription drug overdoses account for thousands of deaths in the United States each year, peaking at over 20,000 deaths per year during the twenty-first century (CDC, 2011). Opiates and sedatives can cause depressed respiration, seizures, or even death. Stimulants can increase heart rate and elevate blood pressure as well as induce heart failure and seizures. Rates of drug overdose have been rising considerably since 1999 (Paulozzi, Budnitz, and Xi, 2006). Between 2004 and 2008, the number of emergency room visits involving the misuse of prescription drugs increased 81%; for prescription painkillers specifically, the increase was 111%, or more than double the visits (SAMHSA, 2011). The misuse of prescription drugs accounted for a large proportion of all drug-related emergency room visits (SAMHSA, 2011). Individuals with comorbid pain problems or mental health disorders have a greater likelihood of overdose (Paulozzi, 2012). Overall, prescription drug overdoses, whether fatal or otherwise, contribute to a significant burden to emergency health departments and first responding personnel.

Economic impacts

There are also major economic impacts; prescription opioid misuse alone costs the United States over \$50 billion dollars each year (Birnbaum et al., 2011). Many of the costs are accounted for by workplace losses, health care associated with prescription drug misuse, and law enforcement costs. The overall costs of prescription drug misuse have been estimated at well over \$100 billion dollars (Harwood and Bouchery, 2004). Thus, prescription drug misuse creates significant economic costs to the societies in which it occurs.

The misuse of prescription drugs also creates burdens for the health insurance system and Medicare given that individuals often obtain prescription drugs through individuals in their social networks who have access to legitimate prescriptions; thus, the costs of these drugs for illicit use are being borne in part by the insurance system (Manchikanti, 2006). These costs may play a small role in the escalation of health insurance premiums. Thus, the problems associated with prescription drug

misuse are significant in their economic costs to society, making research into this drug trend imperative to guide efforts to reduce misuse and its associated costs.

High-Risk Groups

With regards to prescription drug misuse, the literature has identified four high-risk groups: youth, health care providers, heroin addicts, and aging adults (who may also be pain patients). Universally, prescription drug misuse is highly associated with the use of other illicit drugs, heavy drinking, and cigarette smoking (Boyd et al., 2006). Similar to most other forms of drug use, rates of prescription drug misuse are most prevalent among young adults and adolescents, with young adults aged 18–25 being the age group with the highest past-year prevalence followed by youth aged 12–17 (Manchikanti, 2007).

Youth

Adolescents Data on prescription drug misuse among adolescents has been captured by a variety of different surveys such as the National Survey on Drug Use and Health, and Monitoring the Future. Results from these surveys highlight relatively high rates of prescription drug misuse among 12–17-year-olds. Recently within the United States, prescription drugs have been identified as the substances most commonly abused among 12- and 13-year-olds (Johnston et al., 2010). Moreover, most youth nowadays are more likely to experiment first with misusing prescription drugs than with marijuana. This highlights a pattern that some describe as prescription drugs becoming the new “gateway drug” for twenty-first-century youth in this country (SAMHSA, 2010; Manchikanti, 2007). In light of this, some studies have referred to this generation of youth as “generation Rx.” (Quintero, Peterson, and Young 2006).

Those adolescents identified as most at risk for misusing prescription drugs are those who have a history of using other substances, have positive attitudes regarding drug use, or have peers who have positive attitudes regarding drug use (Sung et al., 2005). Additionally, more than a third of teens have indicated that they encounter peer pressure to misuse prescription drugs and nearly 10% specifically state that they are misusing them to get high as a result of fitting in with their peers.

Some studies indicate there is a significant gender gap in the misuse of prescription painkillers and sedatives among adolescents; prevalence rates among females have been found to be more than double those of males in middle and high school (22% versus 10%) (Boyd et al, 2006). Results show that these young girls are frequently exposed to misusing prescriptions from their parents or peers through “friendly sharing” in which drugs prescribed to someone else are shared with adolescent females to treat anxiety and relieve pain caused by migraines and menstrual cramps. Boys, however, were more likely to indicate that their use of these prescription drugs

was related to their desire to get high and as such were also more likely to report signs of becoming addicted to prescription drugs than their female counterparts (Compton and Volkow, 2006; Boyd et al., 2006).

By sharing and promoting the misuse of prescription painkillers and sedatives, family members and peers invariably signal that misusing prescription drugs to self-treat symptoms is normative and safe. This may in turn influence adolescents' decisions to escalate their misuse of prescription drugs for other nonmedically related purposes, as adolescents have indicated they are more prone to misusing prescription drugs because they believe them to be safer than illegal drugs.

In summary, adolescents are a high-risk group for misusing prescription drugs, as nearly 20% report misuse of a prescription drug not prescribed to them (Manchikanti, 2007). Further evidence for the significance of this drug trend exists in how for the first time among teenagers there are as many new prescription drug misusers as there are marijuana users.

Young adults Transitioning from prescription drug misuse among middle school and high school students to college students, we find a plethora of studies exploring misuse patterns and prevalence rates within this high-risk group. The highest rates of prescription drug misuse, as well as the use of illicit drugs, are found among young adults ages 18–25, and it is no coincidence that much of the academic literature on prescription drugs has focused on this age group. For various reasons, college campuses have been the site of many studies on prescription drug misuse and some researchers have noted the extensive availability of pharmaceuticals in collegiate social circles – referred to by some as “pharmers markets” whereby students share, trade, and sell prescription drugs they themselves have been prescribed or have obtained through family members (Quintero et al. 2006).

Similar to other populations, college students who engaged in heavy episodic drinking and/or illicit drug use were also significantly more likely to misuse prescription drugs than their non-binge-drinking or drug-using peers (McCabe, Knight et al., 2005; McCabe, Teter et al., 2005). Though prevalence rates of prescription drug misuse among college students, around 17% in the past year (Johnston et al., 2000), are reported to be approximately the same as those observed within this age group in the general population (SAMHSA, 2010), there are some unique aspects regarding patterns of prescription drug misuse found among college students.

For instance, college students who attend more competitive colleges or universities were found to be at a higher risk for misusing prescription drugs than those at less competitive institutions. Additionally, those with lower grade-point averages (GPAs) were more likely than their counterparts with higher GPAs to be misusing prescription drugs (McCabe, Knight et al., 2005). Furthermore, college students who participate in fraternities or sororities are at a higher risk for misusing prescription drugs than peers not involved in these organizations (McCabe, Knight et al., 2005; McCabe, Teter et al., 2005). Interestingly, many college students report

misusing prescription stimulants to help with school work. However, studies have found that those who misuse prescription stimulants for this purpose are not likely to perform better than students who do not misuse prescription stimulants for academic purposes (McCabe, Knight et al., 2005).

While studies of college students provide important information on the patterns of prescription drug misuse among young adults, many, particularly those beyond the age of 22, are not in college. As such, scholars have sought to assess prescription drug misuse among young adults active in various nightlife scenes, where the use of other drugs has been well established. Results from a venue-based study of young adults active in nightlife scenes found evidence that these young adults are at increased risk for misusing prescription drugs; they reported rates of lifetime misuse over 44%, which are considerably higher than national averages, which are just below 30% (SAMHSA, 2010).

Of particular concern with regards to the misuse of prescription drug among young adults active in nightlife scenes is their combined use with other drugs. Many studies indicate that young adults reporting the misuse of a prescription drug are likely to do so in combination with another substance, the majority of which was done in combination with more than one substance (Quintero, 2009; McCabe et al., 2009; Firestone and Fischer, 2008). For instance, studies focusing on youth in electronic dance music scenes show that polydrug users utilize particular prescription drugs to enhance or moderate the effects of other drugs in a desirable manner (Hunt et al, 2009; Copeland, Dillon, and Gascoigne, 2006; Kelly and Parsons, 2007). The most common combination was the use of benzodiazepines to come down from the effects of stimulant drugs such as cocaine and MDMA (Topp et al., 1999; Levy et al., 2005; Bardhi et al., 2007). As described earlier, polydrug misuse places individuals at higher risk of adverse health outcomes.

Health care professionals

Health care professionals are at risk for prescription drug misuse because of their ready access to prescription medications. This group includes physicians, nurses, pharmacists, and other professionals who regularly work with prescription medications in hospitals, clinics, pharmacies, and other health care facilities. This access is incomparable to other citizens, as almost 9 out of 10 practicing physicians have reported prescribing medications for themselves (Chambers and Belcher, 1992). Often referred to as “impaired providers,” there is a long history of substance abuse problems for health care professionals, dating back to the nineteenth century, although the American Medical Association (AMA) did not implement formal policies on substance abuse among physicians until 1973. The prescription drug misuse trend has become a considerable problem for health care providers along with the rest of the population.

Substance abuse is the most significant health problem that health care professionals face (Talbot and Wright, 1987). Health care professionals report rates

of prescription drug misuse higher than that for the general population (Hughes et al., 1992; O'Connor and Spickard, 1997). Rates of misuse among physicians were considerably higher than those for the general population prior to the recent prescription drug trend, but has continued to escalate along with misuse among the general population (Kuehn, 2007). Some studies have suggested that as many as 10–15% of health care professionals will misuse drugs during their careers (Baldisseri, 2007). The misuse of drugs even differs across specializations within the medical field (Hughes et al., 1999).

The misuse of prescription drugs by health care professionals is significant for a variety of reasons. First, the health and well-being of this occupational group that serves a vital function in society is important. The adverse impact of prescription drug misuse on health care professionals may impair their ability to work effectively. This may also be a group that is particularly resistant to treatment. As such, the misuse of prescription drugs by health care professionals presents unique challenges for the management of this growing problem.

Heroin addicts

Another group at high risk for misusing prescription drugs are individuals who have developed an addiction to heroin. Heroin addicts have been known to misuse prescription opioids to stave off withdrawal symptoms when heroin is not available (Lankenau, Teti et al., 2012). Moreover, heroin users will combine prescription sedatives and opioids with heroin to enhance and potentiate the high (Lankenau, Schragar et al., 2012). Previous studies have identified methadone clinics as ideal locations that provide access to a wide range of prescription opioids and sedatives that are sold, shared, and traded between methadone maintenance patients (Inciardi et al., 2007).

The misuse of prescription drugs concurrently or simultaneously with other drugs is of particular concern in light of how the majority of prescription-drug - related emergency room visits and overdoses reportedly involve the use of another substance (SAMHSA, 2011; Cone et al., 2004). Exploring the intersection of prescription drug misuse and more classic “illicit” drug use is critical for understanding an important subpopulation of prescription drug misusers in the United States and is a major public health concern.

Aging adults and the elderly

The final high-risk group of prescription drug misusers can be found among aging adults. Prescription drug misuse is considered to be second only to alcohol in terms of frequency of abuse among older adults. Many studies reveal that unlike young adults, older adults are misusing prescription medications that are legally prescribed to them. Over 25% of the prescription drugs sold in the United States are used by the

elderly for problems related to insomnia, chronic pain, anxiety, and fatigue (Culbertson and Ziska, 2008). Yet, some aging adults misuse these prescriptions in ways other than prescribed by a doctor.

Among older adults, benzodiazepines have been identified as the most frequently misused prescription drug, followed by opioids (Holroyd and Duryee, 1997). Although the overall prevalence of prescription drug misuse among aging adults is difficult to estimate due to a lack of data, one study estimated that 5% of the elderly population can be considered to be high risk for misusing their prescription drugs (Jinks and Raschko, 1990). The characteristics identified for increased risk of prescription drug misuse among aging adults included being female, experiencing social isolation, having a history of substance use, having a history of depression, being in poor health, and having access to prescription drugs with abuse potential (Simoni-Wastila and Yang, 2006).

Aging females are at higher risk for misusing prescription drugs given that together the factors of age and gender converge to result in aging females' increase in access and exposure to psychotropic medications (Simoni-Wastila and Yang, 2006). However, many studies indicate that one of the strongest predictors for the misuse of prescription drugs among older adults is not gender but, similar to other age groups, having a history of drug or alcohol abuse. One study found that more than 60% of older adults referred for prescription drug abuse also showed evidence of alcohol abuse (Jinks and Raschko, 1990). Other studies have suggested that access to benzodiazepines to treat insomnia and opioids to treat chronic pain may result in some older adults transitioning from abusing alcohol to misusing their prescription medications (Edgell et al., 2000). However, the vast majority of research within this population indicates that patients without a history of substance abuse problems are less likely to misuse the prescription drugs they are prescribed, despite their abuse potential.

Prevention and Treatment

A wide array of prevention programs have been put into place to raise awareness about the prescription drug misuse trend as well as provide information to individuals in need of assistance with prescription drug problems. Many states and other government agencies have stepped up their efforts to address prescription drug misuse through public education and prevention campaigns. For example, the Indiana state government has expended considerable effort on their "Bitter Pill" campaign, with television ads, billboards, and radio spots highlighting the role of prescription drug misuse in overdose, dependence, and other adverse health conditions. Their website www.bitterpill.in.gov complements these public campaigns with a range of information that provides for the needs of a diverse group of individuals who may be drawn to the site.

Among the wide variety of information provided, they highlight the risks of prescription drug misuse as well as commonly abused medications, identify sites for

safe medication disposal, provide contact points for treatment, and provide resources for parents and other adults who want to talk to their children or other loved ones about the risks. They also provide resources for physicians, pharmacists, and other health care professionals who wish to contribute to efforts to minimize drug diversion. Thus, while the prescription drug problem has created considerable challenges, government agencies and other groups are responding with comprehensive efforts to reduce the trend of prescription drug misuse across the population.

Yet, a number of obstacles remain with the prevention of prescription drug misuse. Some studies have noted that less than 40% of physicians have received formal training in medical school to identify prescription drug abuse and diversion (Manchikanti, 2007). Additionally, according to a recent CASA survey, only half of licensed pharmacists received any training to identify prescription drug diversion, abuse, or addiction. Making mandatory educational training programs for those intimately involved in the prescribing and distribution of prescription drugs with potential for abuse can be another crucial tool in facilitating the decline in prescription drug misuse in the United States.

Prescription drug monitoring programs

The establishment of prescription drug monitoring programs (PDMPs) has been a significant effort on the part of states and other governing bodies to prevent the diversion of controlled pharmaceutical substances to the nonmedical market. PDMPs are electronic databases, typically overseen by a wing of state government, designed to collect a range of information on the distribution of prescription drugs from pharmacies, hospitals, and other health care settings. These databases can be utilized by the authorities to identify “pharmacy shopping,” the use of multiple doctors or excessive medical sources, and potentially to differentiate providers who are heavy prescribers for legitimate reasons from those who are overprescribing for less than legitimate purposes – and an additional benefit is that they identify potentially harmful drug interactions for legitimate patients prescribed several different medications. The major overall goal of these programs is to facilitate proper care for individuals in need of treatment, while also minimizing the potential for drug diversion.

There is evidence that real-time access to patient-specific records by physicians influences their opioid-prescribing practices (Baehren et al., 2010). It allows physicians to consider the wider context of patient drug receiving, which provides more informed decision making in the course of patient care. These systems also allow physicians to be front-line providers for individuals potentially in need of treatment. “Doctor shopping” has been associated with increased risk for overdose (Martyres, Clode, and Burns, 2004), and thus physicians with real-time access to these systems are in a position to counsel and assist at-risk individuals in need of care.

PDMPs have been shown to reduce the time and effort required by law enforcement and regulatory investigators to explore leads regarding the diversion of

prescription drugs (Manchikanti, 2007). Furthermore, an evaluation in 2006 found that PDMPs reduce the per capita supply of prescription opioids and stimulants. Evidence also shows that those states that use these programs proactively instead of retroactively have been more effective in reducing the supply of prescription drugs. However, not all states utilize PDMPs and initial results have shown that prescription diversion practices may be increasing in contiguous states without PDMPs. Moreover, only three states currently provide information garnered from PDMPs to physicians and thus for the most part these programs operate reactively as opposed to proactively.

In conclusion, PDMPs have made initial impacts with regards to reducing the supply of divertible prescription drugs. Moving forward, these programs would best be utilized within a national context in which information is proactively shared among physicians and pharmacists across state lines. Thus, while these efforts have helped to stem the tide of prescription drug misuse, more effective deployment of these systems may make further impact on the prescription drug problem.

Drug treatment for prescription drug abuse

The increase in the misuse of prescription drugs has added a considerable burden to the substance abuse treatment system. Treatment for individuals with prescription opioid problems alone rose from 12,447 in 1992 to 105,857 in 2008 (Maxwell, 2011). This represents a considerable increase in demand for substance abuse treatment services, and has resulted in an inability of some regions to meet the needs of a growing patient base. Prescription drug misuse is among the most common problems for young people enrolled in drug treatment (Gonzales et al., 2011).

Between 1995 and 2005, the rate of admissions into drug treatment facilities for prescription opioid users alone more than tripled (Colliver et al., 2006). One study conducted in Toronto found that 83% of patients presenting for methadone maintenance were abusing prescription opioids (Brands et al., 2004). However, methadone maintenance programs are very difficult for patients strictly addicted to prescription opioids to access, due to being largely restricted to those patients whose primary drug is heroin. Additionally, one study indicated that treatment within methadone maintenance programs is made available to only 20% of Americans with opioid addiction (Cunningham et al., 2007). Despite the increasing number of those seeking treatment for prescription opioid abuse, some US states and local communities resist allowing methadone clinics to open or expand within their jurisdiction.

In contrast to methadone, the use of buprenorphine, which can be prescribed by a physician and taken at home, has been identified as a more accessible alternative for those seeking treatment for prescription opioid addiction. Some researchers describe doctor's office-based treatments of buprenorphine as more advantageous, not only due to its increasing accessibility to Americans around the country but also in light of its lower level of perceived stigma and the greater privacy afforded by treating addiction in a way that mirrors other medical issues (Moore et al., 2007;

Mendelson et al., 2008). However, a significant barrier to seeking buprenorphine treatment is the lack of health insurance plans covering the costs of the medication, as over a third of all plans do not cover the costs, which run between \$170 and \$270 a month (Horgan et al., 2008).

Interestingly, those seeking treatment for prescription opioid abuse seek out such treatment earlier than heroin users and were found to be more likely to complete those treatment plans while also having better outcomes as compared to their heroin-using counterparts (Moore et al., 2007; Mendelson et al., 2008). However, the rise in prescription drug misuse not only directly contributes to the growing drug treatment burden, but contributes indirectly as well through their links to transitions to other substances of abuse. As noted above, growing concern has been expressed about prescription opioid abusers transitioning to heroin abuse. Thus, some individuals may be enrolling in drug treatment by the time their prescription pill habit escalates to a heroin addiction, leaving the role of prescription drugs in other treatment admissions less well documented. Similarly, heavy prescription stimulant misusers may transition to the use of street stimulant drugs such as methamphetamine.

Treating prescription drug abuse continues to present unique challenges for drug treatment programs, as some who present signs and symptoms of abuse and dependence developed such conditions due to the use of legitimately prescribed medications. As a result, some suggest that prescription drug abuse treatment should in some circumstances first be dealt with in the confines of a doctor's office before being treated within the context of traditional substance abuse settings, as most doctors will be able to taper off specific opioid or sedative medications for their patients while simultaneously maintaining the appropriate level of palliative care.

Overall, through the implementation of educational prevention efforts, proactive use of prescription drug monitoring programs, and tailoring drug treatment programs to address the specific needs of prescription drug abusers, various academic, medical, and governmental organizations have made headway in addressing the rising societal costs of prescription drug misuse in the United States. Yet, many challenges remain. It is unclear whether the considerable efforts expended to stem the tide of prescription drug misuse will have the necessary impact or whether alternative systemic changes are needed to minimize prescription drug misuse and its attending problems.

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Designer Drugs

Dina Perrone

Designer drugs are difficult to define, often feared, and challenging to control. Many substances, because of their molecular characteristics or novelty, have been classified as designer drugs: LSD, MDMA, PCP, CAT, anabolic steroids, Spice, and bath salts. These drugs, however, are also referred to as synthetics, new psychoactive substances, or research chemicals. The phrase “designer drugs” did not enter the US public’s vernacular until the mid-1980s when print media ran headlines of hundreds of stories with the phrase (Jenkins, 1999). Regardless of the label, these drugs are often created by chemists or pharmacologists to imitate the effects of a more commonly used drug, but attempt to be more precise, safer, cheaper, and easier to access than the original drug. Often, designer drugs *seem* to emerge on the market quite quickly, with little information about their short- and long-term harms. However, most of the drugs have actually been discovered in the early 1900s, and chemists and nonchemists alike are simply re-creating them. Still, their perceived novelty causes many to fear those drugs, the potential harms they can cause, and the potential benefits that may arise from their use. Without fully understanding their effects, the potential for abuse, or the prevalence of use, legislation criminalizing these substances is often implemented. For example, in the United States, the 1986 Federal Analog Enforcement Act made any substance that is chemically similar to an already illicit substance illegal. Comparable laws have been implemented in other countries, such as Australia’s 1995 Criminal Code Act. However, the effects of these laws on designer drug use are largely unknown, but it is clear that the manufacturing of many of these substances continues – with chemists tweaking their formulas to create “new” ones. Thus, it may be valuable to regulate these drugs by modeling a new approach after New Zealand’s regulatory authority that will permit the sale of those designer drugs that have minimal risks.

This chapter provides an overview of designer drugs. To stress the variation of the substances classified as designer drugs and the complexity of the designer drug label, it starts with an analysis of the designer drug classification and describes the effects of common designer drugs, such as MDMA, and those popular among millennials, such as NBOMe. The patterns of use of designer drugs are discussed to demonstrate the narrow market of most of these substances and the reasons for their use. The panic that ensued around the perceived negative effects of these drugs and those who use, such as injection drug users, are presented to provide a framework for understanding the development of current legislation and policies on these substances. Finally, the obstacles to reducing the use and manufacturing of these drugs are examined to demonstrate that a regulatory rather than a prohibitive approach may be necessary.

Designer Drugs

Designer drugs, a term credited to Gary Henderson of the University of California, Davis, Department of Pharmacology, are drugs that contain slight modifications to the molecular formula of an illegal substance (Doherty, 1985; Leen, 1985). The word “designer” refers to the potential “promise” of the quality and effectiveness of the new substance. However, many in law enforcement, such as Drug Enforcement Agency (DEA) Agent Cooper (2008), claim that use of the word “designer” casts these drugs as “somewhat glamorous” (para. 2), much like designer jeans or sunglasses. Designer drugs are most commonly known as synthetic drugs, as they are synthesized in laboratories. However, some designer drugs are actually natural drugs, like *salvia divinorum*, or semi-synthetic because they are derived from nature (Weil & Rosen, 2004). For example, LSD (lysergic acid diethylamide), the first popular designer drug, is a semi-synthetic substance made from the lysergic acid found in the ergot plant. In contrast, PCP (phencyclidine), which is purely synthetic, is “made from scratch” often at the hands of entrepreneurial chemists (Weil & Rosen, 2004, p. 36).

Designer drugs also have other labels: research chemicals, legal highs, synthetic legal intoxicating drugs, and new or novel psychoactive drugs (most of these will be used interchangeably throughout this chapter). Some of these labels for designer drugs are, in fact, misnomers. Most new or novel psychoactive substances (NPS) are neither new nor novel. Rather, pharmacologists, chemists, or academics originally discovered nearly all NPS many years earlier (Kau, 2008). For example, MDMA, which received extensive negative media attention in the mid-1980s, was discovered in 1912 by the Merck Corporation, a pharmaceutical company, and then “was rediscovered” by chemist Alexander Shulgin in 1965 (Jenkins, 1999, p. 87). Substituted cathinones, such as MDPV (methylenedioxypropylvalerone) and CAT (methcathinone), were pioneered in 1928. Thus, most designer drugs are “nothing more than legitimate pharmaceutical product[s] or a rejected pharmaceutical research and development project” (Kau, 2008, p. 1085). In fact, according to Kau (2008), “Truly novel designer drugs have not appeared in at least two decades” (p. 1085). Indeed,

between 1971 and 2011, only 73 “new” drugs were evaluated and scheduled in the United States (Caulkins & Coulson, 2011).

Re-creating or moderately tweaking to re-create substances can be easy and profitable. Even nonchemists who have the raw materials can simply produce the drugs (Kelly, 2011). A mere Google search gives the step-by-step process that includes extracting drugs from plants and provides warnings and suggestions for synthesizing most designer drugs. For others, such as *The Guardian* contributor Mike Power, a new legal high can be manufactured by outsourcing the work to a lab in China. Here, he explains how he created a legal high chemically similar to benzo-diazepines in just two months:

as part of a two-month investigation for the online science and technology publisher Matter, I just devised a new, legal drug, had it synthesised in China, and delivered to a PO Box in central London. It is a close chemical cousin of a substance that was well-loved by some of the world’s most famous musicians, and, it’s rumoured, by John F Kennedy, Marilyn Monroe, Elvis Presley, and Truman Capote – but was banned decades ago... All it took me was a few dozen phone calls to Shanghai, a gmail account, a bank transfer, a PO Box set up in a false name, a few emails to contacts on web forums that gave me the synthesis and the modification and the name of a friendly laboratory, and a bit of reading. Job done. (Power, 2013, para. 5 & 7)

Once manufactured, the product could be sold on 700 different online sites and in local headshops (Travis, 2013), where even the computer illiterate can effortlessly purchase these drugs. One seller informed *The Telegraph* in 2009 that he profited “around £25,000 a week” selling the now banned mephedrone via his website to those throughout the United Kingdom (Leach, 2009, para. 1). Even more profitable is synthetic cannabis; *Bloomberg Businessweek* noted that sellers “can earn retail profits of \$90,000 to \$136,000 a pound” (Dwoskin, 2013, para. 3).

Thus, it is no surprise that Early Warning Systems across Europe are monitoring close to 300 NPS, and the European Monitoring Centre for Drugs and Drug Addiction ([EMCDDA], 2013) reports that on average, a new drug becomes available each week. In the United States, the DEA reports that, as of April 2014, approximately 200 “synthetic designer substances” are legally sold on the market (Leonhart, 2014, p. 7). Thus, drug agencies throughout Europe, the United States, and Oceania claim that the world is experiencing “an unprecedented growth in their number, type and availability” of designer or new psychoactive substances (Griffiths, Evans-Brown, & Sedefov, 2013, p. 2). The Internet, the transnational nature of the drug market, and opportunity to tap into a billion-dollar drug market can explain this growth.

Examples of Designer Drugs

Designer drugs can be *stimulants* (e.g., piperzines [e.g., BZP], and some phenethylamines [e.g., mephedrone]), *depressants* (e.g., GHB), *hallucinogens* (e.g., tryptamines [e.g., DMT] and some phenethylamines [e.g., 2-Cs and NBOMes]), *anesthetics* or

dissociatives (e.g., phencyclidines [e.g., PCP]), *performance enhancers* (anabolic steroids), or *cannabimimetics* (e.g., synthetic cannabinoids [e.g., Spice or herbal incense]). Five designer drugs – (1) MDMA, which has been popular among electronic music scenes since the late 1980s; (2) Spice, a hopeful legal substitute for marijuana used throughout the world; (3) anabolic steroids, found among local, national, and international athletes; (4) NBOMe, a potent hallucinogen used among psychedelic experimenters of the millenium; and (5) Fentanyl, a synthetic opiate used among some injection drug users – are discussed here in a bit more detail.

MDMA (methylenedioxyamphetamine or ecstasy)

German psychiatrists developed MDMA or ecstasy in 1912 for its potential appetite-suppressant qualities (Gahlinger, 2001). Animal tests were not promising, and the drug was shelved. In 1953, the US Army Office of Strategic Services revisited the drug, testing it on humans as a truth serum; it was rejected. In the 1965, Shulgin studied the drug and published the effects of MDMA on humans (Gahlinger, 2001). He found that people became more open to social interaction, which prompted doctors and psychiatrists to use MDMA, before it underwent any clinical trials and received approval from the US Food and Drug Administration (FDA), as an aid in psychotherapy. The drug officially became known for its ability to stimulate empathy (Davenport-Hines, 2001; National Institute on Drug Abuse [NIDA], 2006), and, on the streets, it was named ecstasy. With a name like ecstasy, MDMA received a significant amount of attention in the media; this name has also been argued to contribute to the increase in MDMA sales in the late 1980s and early 1990s (Eisner, 1993).

MDMA or ecstasy has become one of most commonly used drugs in the world (Mosher & Akins, 2014). Its use is most popular among club goers and can be seen in many clubs and raves throughout the United States and abroad (e.g., Perrone, 2010) because of its stimulant effects. But, MDMA's effects are different from those of other stimulants; it also produces effects similar to mescaline (Valentine, 2002). The unique effects of MDMA are caused by the release of serotonin, which can alter mood and perception. People who use MDMA report feeling empathy, emotional warmth, openness, closeness to people, and decreased anxiety (Perrone, 2010; NIDA, 2006; Valentine, 2002). The effects of MDMA usually last for four to six hours (Weil & Rosen, 2004). Although some people report an increase in sexual arousal, MDMA can make it difficult for men to achieve an erection and for men and women to reach orgasm.

A 51-year-old male university professor describes the effects of MDMA as follows:

When MDMA came along a few years later, I was delighted. It was legal, shorter acting, and the price I had to pay was much, much less, at least at first. I turned a lot of people on to it and saw it do incredible things: save marriages, create lifelong friendships, lead to people falling in love. One of my friends produced a T-shirt that said, "Don't Get

Married for at Least Six Weeks After Ecstasy!” I think MDMA could put a lot of psychiatrists and psychologists out of business. (Weil & Rosen, 2004, p. 243)

A 28-year-old surgical resident describes his experience with MDMA/ecstasy. He explains:

Ecstasy kind of unites your whole body in this feeling of wellness and warmth and beauty and at the same time extends beyond that and connects ya to the music, and what's great about it, and connects you to everyone around you. When you're at the peak of your ecstasy, when you're rolling [experiencing the high from ecstasy] your balls off, you really feel the true sense of brotherhood, the unity of existence of man, of what connects you to everything that in your normal existence, ya know, you pass by people in the streets, and you say, ya know, you hate this person. (Perrone, 2010, p. 135)

MDMA use can also produce some negative and undesirable effects. Psychological effects include restlessness, anxiety, depression, sleep disturbances, and irritability (NIDA, 2006; Office of National Drug Control Policy [ONDCP], 2002). MDMA can also cause adverse physical effects, which include nausea, sweating, teeth grinding, jaw clenching, muscle cramping, tremors, blurred vision, rapid eye movement, and dehydration. These effects can be exacerbated when MDMA is taken with other drugs or alcohol and used in clubs with poor ventilation. Many club goers who use MDMA do not drink enough water, so dancing in a hot and unventilated club can lead to dehydration and overheating. Further, adverse effects can result from contaminated ecstasy pills, which can include methamphetamine, amphetamine, PCP, and ephedrine (Valentine, 2002). Many MDMA users (mostly long-time users) complain that as they get older, they become more sensitive to the-day-after-fatigue.

The university professor commented on the after-effects of MDMA:

I wish I could still use MDMA once a month, as I used to, but I'm afraid that as I've gotten into middle age, I can't handle the burned-out feeling that I get the next day. Even taking lower doses, I can barely drag myself around or focus my mind for the next 24-hours. So now I take it maybe once a year. I still think it's one of the best drugs ever invented. (Weil & Rosen, 2004, p. 243)

MDMA continues to be applauded for its therapeutic effects. Studies show that it is useful in the treatment of depression, anxiety, eating disorders, and addiction (see the Multidisciplinary Association for Psychedelic Studies, 2014). Two clinical studies, one in the United States and the other in Switzerland, found that MDMA had positive short- and long-term effects on patients with post-traumatic stress disorder (PTSD [Buchen, 2010]). In the US study, 85% of patients who underwent MDMA therapy no longer met the criteria for PTSD. But, MDMA's status as a controlled substance (Schedule I) has limited research on MDMA's medical use.

Spice

In the early 2000s, synthetic cannabinoids were developed for therapy-based research and many were marketed as Spice (Perrone, Helgesen, & Fischer, 2013). “Spice’ refers to a wide variety of herbal mixtures that produce experiences similar to marijuana (cannabis) and that are marketed as ‘safe,’ legal alternatives to that drug” (NIDA, 2012a, p. 1). Marijuana users, who seek to avoid the consequences of using an illicit substance, seek out and use synthetic cannabis drugs as substitutes. The drug is commonly sold under names such as Spice, Black Mambas, Yucatan Fire, and K2. Spice is often advertised as incense, labeled “not for human consumption” (NIDA, 2012a), and lists some of its ingredients as “natural.” However, Spice is often a dried, plant material that is sprayed with synthetic chemical additives (usually from the cannabinoid family) that produce psychoactive effects like those of THC (Tetrahydrocannabinol), the primary active ingredient in marijuana (Perrone et al., 2013).

Overall, Spice’s effects are similar to marijuana – relaxation, altered perception, and elevated mood. Hallucinations, paranoia, extreme anxiety, and confusion are some of its negative effects. Poison control centers have noted several other adverse effects untypical of marijuana, including rapid heart rate, agitation, vomiting, and raised blood pressure (NIDA, 2012a). Like marijuana, Spice is typically smoked but some prefer to ingest it orally or via vaporization (Perrone et al., 2013). Here, a Spice user from Perrone et al.’s (2013) study talks about the negative side effects experienced while smoking Spice. They explain:

this felt more like, um, almost like I couldn’t breathe. Like I couldn’t get a full breath. You know how when, maybe you’ve just been running or something...no matter how many deep breaths I took, my heart rate would not slow down for like probably ten minutes...It [Spice] kind of fueled the paranoid episodes that I’ve had...It [Spice] just doesn’t feel right. Way more than a stressor on your body, like your body is trying to deal with whatever cannabinoid that is in there, and it’s just like you experience it in a different way. It feels worse. I mean marijuana to me is just like a soft drug; it’s not a real hard drug. It doesn’t give you too many negative effects when you’re doing it unless you’re doing it for a long time. (p. 222)

Significant concerns have been raised about the ingredients in Spice products (EMCDDA, 2009; NIDA, 2012a). Most of the ingredients listed on the package are not found in the product, and ingredients in the product are absent from the list on the package. Because it is impossible to know the contents of Spice products, the effects are unpredictable, and determining the cause of adverse effects is not often possible.

Steroids

The use of performance-enhancing substances has become a ubiquitous practice, particularly among male athletes. Anabolic steroids – the most commonly used performance-enhancing substances – are male hormones that stimulate the building

phase of metabolism or anabolism (Weil & Rosen, 2004). Anabolic steroids promote the production of red blood cells, stimulate muscle growth and protein synthesis, and activate skeletal muscle growth. Anabolic steroids were synthesized in the 1930s to treat hypogonadism. Today, physicians use low-dose steroids to treat some illnesses and conditions, including advanced breast cancer, menopause, burns, trauma, and AIDS (Bahrke, Yesalis, & Wright, 1996).

Anabolic steroids are usually injected into the muscles, orally ingested, or topically applied as a skin cream (NIDA, 2012b). While anabolic steroids and various other performance-enhancing substances are primarily used to alter one's body, these substances also alter mood and emotion. Users report feeling euphoric and having increased energy and vitality. One steroid user from a US study explains:

When I'm on (steroids), I feel great. Unless you've been on, you don't know what I'm talking about. It just gives you a feeling that you can handle anything. You just feel so powerful and that makes you feel good about the rest of your life, like you can do anything. (Petrocelli, Oberweis, & Petrocelli, 2008, p. 1194)

Some people continue to use steroids because of these psychoactive properties.

Weil and Rosen (2004) warn that, "anabolic steroids may be hazardous to both physical and mental health" (p. 178). Anabolic steroids unbalance the body's hormonal system, weaken the body's resistance, and increase aggression, which may lead to violent behavior. They can also negatively affect sexual desire and potency. Other adverse health effects include dependence, liver disease, infertility, severe acne, fluid retention, testicular atrophy, and cardiovascular disease (NIDA, 2012b). However, many users do not experience these effects and ignore the warnings. Here is one example:

That's total bullshit I've been taking steroids for eight years and I have three kids and a full head of hair. As long as you know what you're doing, they are only going to help you, not hurt you. The government is just totally fucked when it comes to drugs, so I don't pay any attention to their hype. (Petrocelli, Oberweis, & Petrocelli, 2008, p. 1198)

Fentanyl

Fentanyl is a strong synthetic opiate analgesic, which is commonly prescribed by physicians to patients with chronic and severe pain (NIDA, 2012c). Since 1964, fentanyl has been a Schedule I substance under the 1961 UN Single Convention on Narcotic Drugs (EMCDDA, 2011). However, during the late 1970s and early 1980s, in the United States, fentanyl and derivatives of fentanyl (i.e., alpha-methyl-fentanyl) were sold on the streets as pure heroin (Jenkins, 1999). Pharmaceutically marketed as Sublimaze and street-marketed as China White or Persian White, fentanyl, which produces effects similar to other opiates, is 80 times more potent than morphine. It has been deemed the cause of hundreds of overdoses in California between 1979 and 1985 (Jenkins, 1999).

Fentanyl is still prescribed by doctors in the United States for the treatment of pain (NIDA, 2012c. It is prescribed as a lozenge, intravenous injection, or as a transdermal patch (EMCDDA, 2011). Like other opioids, fentanyl binds to the opiate receptors in the body, which control emotion and pain. When these receptors bind, the increase in dopamine levels produces a state of relaxation and euphoria. An 18-year-old male describes the state of euphoria and relaxation produced by fentanyl on an online forum:

My eyes started to feel droopy, my body became itchy, but this did not detract from the experience at all. I was in absolute ecstasy. I remained in this same sitting position for some time and then eventually made my way to my bed to stare at the TV while lying down and nodding off. I never actually fell asleep, although I did feel quite dreamy. I took another hit over an hour later and that was enough to knock me out later on during the night. (Serotone, 2012, para. 9).

Some of the adverse effects that are produced by fentanyl are: headache, constipation, fatigue, vomiting, anemia, nausea, dizziness, and peripheral edema. A man using the transdermal fentanyl patch describes his negative effects on an online forum:

Throughout the day it got more intense. It comes on in waves it feels really strong sometimes then others it seems lessened. My vision keeps getting blurry and I have to blink often. If I don't it feels too strong and I get dizzy. I was able to work that day I did throw up at least 10 times. Everytime [sic] I drank anything I would throw it up. I could hold down some water, it's bad to because its [sic] hot at my work. I woke up the next morning extreamly [sic] dizzy and very sick I couldn't stop gagging and throwing up stomach acid. Also I got a pounding head that was just horrible [sic]. I don't understand how one can have a headache on a painkiller. (Nick, 2004, para. 2).

Mixing fentanyl with other substances can exacerbate adverse health effects. On the streets, fentanyl is commonly mixed in (or substituted for) heroin or cocaine, enhancing the effects and causing nausea, confusion, tolerance, depression, drowsiness, constipation, sedation, and coma. The EMCDDA (2011) reports that "a significant number of deaths have been reported in the EU and USA following the ingestion of illicitly synthesized or 'designer' fentanyls" (para. 6).

NBOMe

NBOMe or "N-Bomb" refers to any of the three closely related synthetic hallucinogens (251-NBOMe, 25C-NBOMe, and 25B-NBOMe) that are being sold as legal substitutes for LSD or mescaline" (NIDA, 2014, para. 6). These substances are usually advertised as "smiles," "251," or "legal acid" and sold on the Internet. They are analogues of the 2C series of psychedelic phenethylamine drugs that include an N-methoxybenzyl (hence, "NBOMe")" (Caldicott, Bright, & Barratt, 2013, p. 322).

NBOMes are typically sold via blotter paper (National Institute on Drug Abuse, 2014, para. 6). Similar to other hallucinogens, NBOME compounds act on the 2A (5-HT_{2A}) serotonin receptors (Zuba, Sekula, & Buczek, 2013).

NBOME compounds were virtually unknown before 2010, thus scientific evidence on the safety of their use is scarce. Despite the dearth of research, these three synthetic hallucinogens were classified as Schedule I drugs by the DEA (2013b). The most recent research on these substances indicates that they can cause cardiac and respiratory arrests, seizure, and death, even in small doses (DEA, 2013b). The illicit use of these substances is growing in popularity because of their hallucinogenic properties. NIDA (2014) reported that 19 youths have died from consuming these substances.

According to the EMCDDA (2013), the effects of 251-NBOME can last four to six hours when the substance is insufflated and six to ten hours when the substance is used by placing it under the tongue (sublingually). Some of the desired effects reported include hallucinations, mental and physical stimulation, unusual body sensations, change in consciousness, empathy, euphoria, mood lift, increased awareness, and sexual arousal (Advisory Council on the Misuse of Drugs, 2013; EMCDDA, 2013). Users have described the hallucinogenic effects as “extreme patterning, vibrant coloring, strong sound distortion (sound leaking in and out of rooms and into the user), [and] very strong electric spasmodic body high” (Zuba, Sekula, & Buczek, 2013, p. 8). Others explain that the N-Bomb is “‘visually hallucinogenic’ whereby ‘you see all kinds of things that aren’t really there’” (Sanders, Lankenau, Bloom, & Hathazi, 2008, p. 396).

Some users have experienced some negative and unwanted effects such as confusion, paranoia, nausea, insomnia, swelling of extremities, peripheral numbness, panic attacks, and scrambled communication (EMCDDA, 2013). Other undesired effects include loss of time and space, and, as one user explained, “the most horrible diarrhea” (Sanders et al., 2008, p. 396).

Designer Drug Use

Most designer drugs are not widely used (see Figure 8.1). In fact, according to the 2013 Global Drug Survey, approximately 7% of the 80,000 respondents across 17 countries used legal highs, research chemicals, and/or synthetic cannabis (aka designer drugs) in the past year (Winstock, 2014). The United Kingdom has the highest prevalence of use in the past year and Switzerland has the lowest. Epidemiologists, drug researchers, and those studying drug markets claim that geographic location and the illicit drug market affect the availability and prevalence of designer drugs.

Designer drugs are common in certain countries but not others, and even some designer drugs are more popular in certain countries than other designer drugs. Further, some designer drugs are commonly used in certain cities in those countries, but not others, and among certain age or subcultural groups, but not others. Rather,

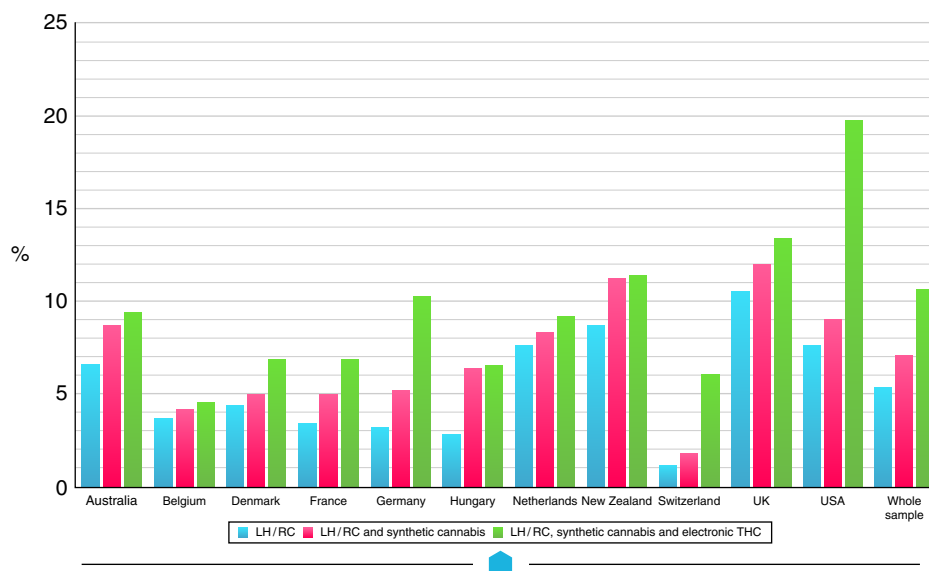


Figure 8.1 Designer drug use by country. Legal high, research chemical, and synthetic cannabis use (last 12 months) [countries with over 1,500 respondents]. Source: Winstock (2014), “Global Drug Survey 2014 Findings.” Reproduced with permission of Adam Winstock

designer drugs tend to be preferred by certain individuals within a very niche market (Reuter, 2011). For example, mephedrone is popular and has been added to the poly-drug repertoires of users in the UK gay dance scene (Wood, Measham, & Dargan, 2012). However, interest in mephedrone in the United States is low (Johnston, O’Malley, Bachman, & Schulenberg, 2014; Kelly, Wells, Pawson, Leclair, Parsons, & Golub, 2013). Psychedelic NPS have become popular on the Australian ecstasy-using scene (Bruno, Matthews, Dunn, Alati, McIlwraith, Hickey, Burns, & Sindich, 2012) and among young people in the electronic music scene in the United States. Benzylpiperzine (BZP) was very common in New Zealand, but a market did not develop on the same scale in the United States, Australia, or the United Kingdom.

Even within particular regions, differences in use patterns have emerged. For example, the National Forensic Laboratory Information System (DEA, 2013a) in the United States showed seizures of synthetic cathinones, like MDPV, to have a similar prevalence rate across the East and most of the South, while its prevalence in the West and Northeast was trivial (see Figure 8.2). Synthetic cannabinoids, in contrast, seem to be popular, for the most part, across the globe (Winstock & Barratt, 2013; Winstock, 2014).

Even though most designer drugs are made outside of the United States and reach Europe before making it to the United States, the 2012 *World Drug Report* (United Nations Office on Drugs and Crime [UNODC], 2013) and the Global Drug Survey (Winstock, 2014) demonstrate that the United States has one of the highest use rates of amphetamine-type stimulants, synthetic cannabis, ecstasy, and synthetic opioids

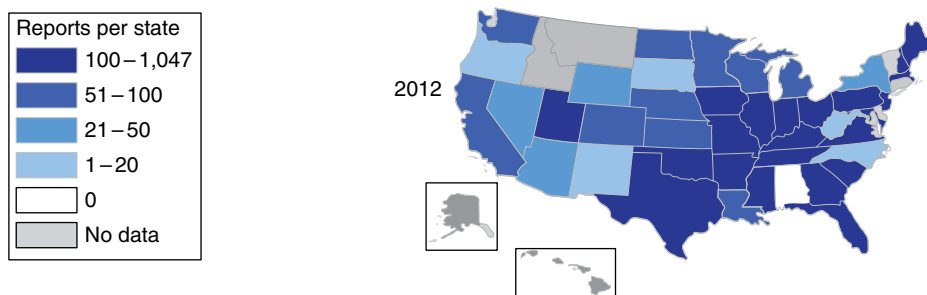


Figure 8.2 Synthetic cathinone seizures. Source: Drug Enforcement Administration (2013, p. 16), “National Drug Threat Assessment Summary.”

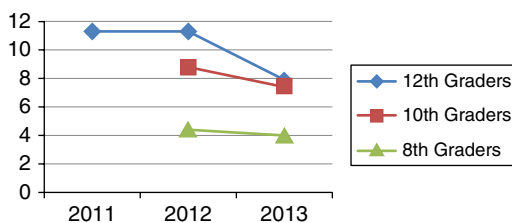


Figure 8.3 Past-year synthetic marijuana use among US HS Students. Source: Data from Johnston et al. (2014), “Monitoring the Future National Results on Drug Use: 1975–2013: Overview, Key Findings on Adolescent Drug Use.”

in the world. But, a survey of US high schools students shows that, perhaps, the synthetic cannabis fad is passing. Approximately 11% of 12th graders consumed synthetic cannabis in 2012 (Johnston et al., 2014), which lowered to 7.9% in 2013 (see Figure 8.3). Tenth and eighth graders experienced a similar drop from 8.8% to 7.4% and from 4.4% to 4.0%, respectively. Nonetheless, synthetic cannabinoids are still the second most frequently used illegal drug among high school seniors after marijuana (Johnston et al., 2014).

As is illustrated in Figure 8.1, New Zealand follows the United Kingdom in its designer-drug use. New Zealand is worth mentioning because it has implemented an innovative policy regime to address these substances, which is discussed in detail below. New Zealand has a long history of legal-high use primarily due to the country’s geographical isolation, small population, and long distance from traditional production areas for heroin and cocaine (Sheridan, Butler, Wilkins, & Russell, 2007). As a result, a range of legal highs have been popular in New Zealand over the past 10 years, including BZP, DMAA (Methylhexanamine or 1,3-dimethylamylamine), synthetic cannabimimetics, such as Kronik and Spice, and plant extracts, such as *salvia divinorum*. Prior to the prohibition of BZP, BZP was an annual NZ\$24 million market with an estimated 100 varieties of BZP products. A 2006 national household survey of BZP use found that 40% of males aged 18–24 years old had used BZP in the past year (Wilkins, Girling, & Sweetsur, 2007).

Reasons for use and patterns

For the most part, the reasons for using designer drugs are very similar to reasons for using non-designer drugs, with some exceptions. Biological, psychological, and sociological factors have been linked to substance use – despite the substance’s classification. And, for many, using drugs is pleasurable and fun (e.g., Duff, 2008). However, three other factors seem to be most related to the use of designer drugs. First, peers, for substance users, in general, are the most significant cause for initiation of drug use, persistent drug use, and drug abuse. But, for the designer or synthetic drug user of the millennium, the concept of a peer now includes the virtual or online friend. Second, the use of designer drugs or legal highs is linked to the shift from the use of illicit substances. And, finally, the use of designer or synthetic drugs is linked to the availability of illicit drugs.

Globalization is a major force in designer drug production, consumption, and dissemination (Barratt & Lenton, 2010). The expansion of digital media and other information and communication technologies and their increasing role in everyday life have facilitated the global spread of these drugs. Designer drugs are discussed and sold on both the mainstream and underground Internet (Barratt, 2012; Van Hout & Bingham, 2013a, b). Users join various online social networking sites catering to drug users. There, they engage in a variety of forums about drugs, including designer drugs, and globally share information. They provide dosage information, outline the effects of the drugs they experienced, warn about potential harms, and suggest which products are best and which are the worst. Users also review online purchases of designer or NPS products, cautioning against particular sellers and substances. Thus, the effects of peers have moved beyond interactions in physical space to virtual interactions. Individuals have friends across the globe and learn about drugs from these new friends.

When an illicit substance “dries out” or the purity of the illicit substance decreases, users often seek alternatives. For example, Australia experienced a rapid increase in designer stimulant use when both the availability and purity of ecstasy had declined (Dunn, Bruno, Burns, & Roxburgh, 2011). Likewise, when New Zealand banned BZP, 21% of frequent ecstasy users began using alternatives, such as DMAA (Wilkins, Sweetsur, Smart, & Griffiths, 2011). Even injection drug users in Hungary shifted to injecting synthetic cathinones when the availability of heroin declined and these new designer drugs became accessible (Péterfi, Tarján, Horváth, Csesztregi, & Nyírády, 2014). However, this does not necessarily imply that these new substances will cause the desistance from ecstasy or heroin. For example, in the United Kingdom, mephedrone (a synthetic cathinone) may have become popular because of the decrease in purity and availability of ecstasy, but once mephedrone was banned and ecstasy returned, users simply consumed both (Measham, Moore, Newcombe, & Welch, 2010).

Users of illicit substances often seek legal alternatives to avoid stigma, be part of the licit drug-using community, and evade criminal justice sanctions. An analysis of online reviews written in English of designer drug products sold on the web showed that purchasers of these products were illicit drug users in search of legal alternatives (Bruneel, Lakhdar, & Valliant, 2014). Most, in fact, compared the price, quality, and effects of the legal alternative to the illicit substance.

A substitution for cannabis, the most widely used illicit substance in the world (UNODC, 2014; Winstock, 2014), could generate substantial profits. According to Winstock and Barratt (2013), 99% of those in the Global Drug Survey who reported using synthetic cannabis also used natural cannabis in their lifetime. In fact, 93% of these users preferred the natural cannabis to the synthetic. Perrone et al.'s (2013) study in the United States of synthetic cannabis users had similar findings, but also showed that many users consumed synthetic cannabis to avoid positive drug tests that could lead to criminal justice punishments or bar them from employment or enrollment in the US Military. Australian cannabis users also stressed that they tried synthetic cannabis because it was legal (Barratt, Cakic, & Lenton, 2013).

Fearing designer drugs

Most of the panics around designer drugs mimic those panics historically on drugs (e.g., alcohol, marijuana, peyote, crack). Like the scares, crusades, and panics around drugs throughout history (see Cohen, 1972; Gusfield, 1981; Hernandez, 2014; Reinerman & Levine, 1997), the scare around designer drugs stresses that if something is not done about the use of these substances, then life as it is known will end. The message is often apocalyptic and catastrophic. The panics and fears tend to exploit the public's fears and anxieties that are already held – such as racial prejudices, violence, rape, or children suffering. Thus, the message around a substance would indicate that women and children (often white women and children) must be protected from the drugs and their users. The reaction is often out of proportion to the actual prevalence of use, and the prevalence of use tends to be presented as an “epidemic” when, in fact, it may not meet such rates.

Given most designer drugs are research chemicals, synthetics, or lab-made substances that tend to be legal, the fear around them stems from the fears of science and experimentation, and the use of science for physical enhancements or physical pleasures (c.f. Jenkins, 1999). One could reflect on the fears around an irresponsible scientist creating a violent Frankenstein, the fears around the use of steroids or other performance enhancers in sports, or the fears of a *Brave New World* (Huxley, 1932) doped into bliss. These fears are predicated around the “unnatural,” chemically engineered, unpredictable and uncontrollable human or the society void of free will and aspirations (see Jenkins, 1999). Thus, the fear of designer drugs is linked to the fear of the “designed” human.

Zombies

A panic around designer drugs has occurred every few years, starting in the 1960s. The media portrayal of these “designer drugs” helped fuel a panic, or as Jenkins (1999) named it, a “synthetic panic” over “the power of science and technology to reshape human nature and subvert or corrupt humanity in a well-intentioned quest for social betterment” (p. 7). Designer drugs are a “20th century Pandora's Box of

high-tech addiction and death” (Doherty, 1985, p. 11). For example, the synthetic panic around LSD of the 1960s provided stories of young people thinking they were supernatural and immune to injury (e.g., Goode, 2008). Users of speed in the late 60s and 70s were called “Frankenstein speed freaks” (Morgan, 1981, p. 156). And, PCP users were labeled zombies, hulks with superhuman strength, and monsters impervious to bullets. Because of these presumed effects, police were instructed to consider a person high on PCP as threatening and extremely dangerous. In fact, Rodney King was believed to be high on PCP when the police confronted and then severely beat him in 1992. However, “there was no medical evidence that King had been using the drug at or near the time of the attack” (Jenkins, 1999, p. 68).

By the mid-1980s and throughout the 1990s, the panic over these substances met unprecedented levels. For example, between 1985 and 1986, the print media ran 400 stories about the dangers of designer drugs; in 1984, they ran four (Jenkins, 1999). The expressions, metaphors, and analogies used in the previous two decades continued to appear. Fentanyl was described as a “Frankenstein monster” (N.A., 1981, p. 10); methcathinone (CAT) was described as a “chemical predator” (Jenkins, 1999, p. 127); and methamphetamine users were tagged “zombies, fueled by paranoid fantasies” (Cohen, 1997, p. 1). During the 2000s, similar rhetoric surrounding designer drugs were perpetrated. Both bath salts (Christensen, 2013) and krokodil (Mohan, 2013) were tagged “zombie drugs,” and the mephedrone user was deemed a “socially apathetic zombie” (Starks, Radice, & Bell, 2010, p. 32).

However, in the millennium, the proliferation and interactive nature of the Internet amplifies and accelerates designer drug scares (e.g., Forsyth, 2012). Local stories about drugs are now “accessed worldwide (glocal)” (Lancaster, Hughes, Spicer, Matthew-Simmons, & Dillon, 2010, p. 206). Social networking sites can make one story “go viral.” Unsubstantiated stories can now be read throughout the globe on the web. Take the story reported in *The Sun*, a tabloid sensationalist newspaper, of the teen who used a legal drug and ripped off his scrotum (Soodin, 2009). The story was originally posted as a prank on an Internet forum. This fake story spread quickly. It was quoted by UK police in an internal document, reported in both *The Courier Mail* (2009) and the *Herald Sun*, Australian newspapers (Lancaster, Hughes, Spicer, Matthew-Simmons, & Dillon, 2010), and was re-posted and liked throughout the social media site, *Facebook*. *YouTube* videos of individuals high on designer drugs, such as *salvia divinorum*, have also spread rapidly on the Internet (e.g., Casselman & Heinrich, 2011; Lange, Daniel, Homer, Reed, & Clapp, 2010). These videos have been used by US legislatures to demonstrate the harms of *salvia divinorum* and propose criminalization policies for its possession, sale, and distribution (e.g., Sullum, 2009).

Uncontrollable

The fears around designer drugs from the mid-1980s into the millennium not only stressed uncontrollable users but also emphasized the uncontrollable designer drug market. Essentially, because chemists can simply “create variants that have not yet

been outlawed,” law enforcement is “totally frustrated” (Corwin, 1985, p. 3). Thus, in the 1980s, these drugs were deemed “An Enforcement Nightmare” (Shafer, 1985, p. 1), and in the millennium the nightmare of controlling these drugs was paralleled to playing “a game of Whack-A-Mole,’ with suppliers tweaking compounds by a single molecule just as they are added to the list of banned substances” (Williams, 2014, para. 14). Even controlling anabolic steroids in sports is considered a “cat-and-mouse game” (Ortiz, 2013, p. C4).

Designer drugs seem to emerge quickly, often among specific populations, making them difficult to detect in general population surveys and routine health statistics. And, products, names, and ingredients are always changing (Measham, Moore, & Østergaard, 2011). As we were warned 30 years ago, “Synthetic street drugs can now be developed and manufactured faster than they can be identified and controlled” (Lednovich, 1985, p. A3). The law and the detecting mechanisms are still struggling to keep up with science and the market (e.g., Perrone et al., 2013).

As a result, most of the designer drugs, when they first appear, are legally manufactured and sold – they are not prohibited under the UN Convention on Psychotropic Substances (1971) or the US Controlled Substances Act (1970). They are often marketed as legal products (e.g., bath salts, plant food, herbal incense) not intended for human consumption, and the products do not always accurately indicate their ingredients or chemical compounds. This makes it challenging for health care providers to identify which drug their patient consumed; drug contents and potencies are not labeled (see Musselman & Hampton, 2014). Furthermore, online and physical retailers may still continue to sell banned products, since they may be unaware and/or uninformed about the compounds in the product (Dargan, Hudson, Ramsey, & Wood 2011). Leonhart (2014), an administrator for the DEA, estimated that “there are currently 200 non-controlled synthetic designer substances representing every illicit class of drug in the marketplace today” (p. 7).

Controlling Designer Drugs

Controlling designer drugs is a challenge. They emerge rapidly; they spread quickly and on an international scale via the Internet; their molecular structures are modified to circumvent the law; their packaging is nondescript; and they are difficult to detect. Globally, nations are experimenting with different policies to reduce the manufacture, distribution, sale, and use of these substances. Some are banning the specific designer drug. Others, like the United States, are banning specific drugs in addition to all possible analogues of the banned drugs. The United Kingdom is imposing generic bans on substances. And, to date, only New Zealand is moving away from a prohibitive regime and attempting to regulate the substances based on their harmful effects. While each of these policies has their advantages and disadvantages, it has been quite clear that prohibitive and criminalization policies have not met their goals (Global Commission on Drug Policy, 2011). New Zealand’s regulatory regime, however, is new, and it is still unclear if it will be effective.

Prohibition

When a drug is prohibited, manufacturers, distributors, and users face criminal penalties. In the United States, a drug conviction could result in the loss of a variety of social welfare benefits, including student financial aid, government subsidized housing, and monies for food. Moreover, US drug prohibition has contributed to skyrocketing incarceration rates, disproportionately affecting communities of color. US police methods have become more militarized, and police resources have focused on drug interdiction efforts, often at the expense of other crimes.

By many accounts, these efforts in the United States and globally have not been effective in addressing the drug problem. Supply has not decreased, prices have not dropped, and purity and use have been pretty inconsistent, with some periods of increased purity and use and others of decreased purity and use. Historically, the effects of criminalizing one substance has had minimal effects on decisions to use (Perrone, 2010), but has resulted in the creation of another substance. For example, alcohol prohibition led to moonshine (Weisheit, Smith, & Johnson, 1991), and the criminalization of cocaine contributed to the emergence of crystal methamphetamine (Booth, 2007). Even the prohibition of one designer drug, ecstasy, prompted the development of another: the ephedrine-based, and legal, herbal ecstasy (Richardson, Slone, & Michels, 2007).

US law enforcement has been playing this game of whack-a-mole as it attempts to prohibit synthetic cannabis. The US DEA first temporarily banned or emergency scheduled (tools that some governments have to prohibit substances prior to legislative action) certain cannabimimetics. Then, President Obama signed the 2012 Synthetic Drug Abuse Prevention Act, which criminalized cannabimimetic agents and 15 synthetic cannabinoids into a Schedule I. At each instance, manufacturers either shifted to increasingly dangerous chemicals (e.g., US Drug Enforcement Administration, 2012, 2013a) or just changed the packaging and the name, and resold the same product without removing/changing the illicit compounds (see Dargan et al., 2011).

Product labels with ingredients are missing from these products. Thus, identifying that a product comprises a banned substance requires law enforcement officials to conduct forensic analyses. Obviously, this is quite laborious and costly, since law enforcement officials would need to check products in every headshop and on every online retail store to police these substances effectively. This has left the retailer or the consumer to bear the brunt of the legal risk, especially when these manufacturers operated overseas (Khey, Stogner, & Miller, 2014), and has allowed manufacturers to remain one step ahead of the law (see Perrone et al., 2013 for an overview).

Analogue bans

The United States relies on the 1986 Controlled Substance Analogue Enforcement Act (21 U.S.C. § 813) as a tool to winning the cat-and-mouse game, albeit, unsuccessfully. The United States implemented this law at the height of the designer

drug scare during the 1980s with the hopes of reducing the proliferation of these substances. Under the Analogue Act, any substance that is “intended for human consumption” is “substantially similar in structure,” has a “substantially similar chemical effect,” or is “represented to have such an effect” to either a Schedule I or II substance, shall be treated as that scheduled substance (21 U.S.C. § 813). Thus, to meet the standards for prosecution under this law, it must be for humans to consume and *prosecutors* must demonstrate that the molecular structure is similar to an already scheduled drug.

These criteria pose two significant challenges. First, most designer drugs, in the millennium – like synthetic cathinones or cannabimimetics – are sold as bath salts, plant food, or incense with the label “for novelty use only” or “not intended for human consumption.” So, prosecutors are often unsure if the law applies. Second, a chemist and/or a pharmacologist must show that the substance is chemically and pharmacologically similar to a prohibited substance. With many molecular complexities and varying degrees and endless possibilities for modifications, this is neither an easy nor a cheap task. It requires lengthy investigations that can strain resources (e.g., Rannazzisi, 2011). As a consequence, in about 30 years, only about 70 cases have been successfully prosecuted under the Analogue Act (Reuter, 2011). And, each “successful prosecution... does not render the substance an analogue in subsequent prosecutions” (Rannazzisi, 2011, p. 12). Therefore, despite the efforts of law enforcement to intercept and confiscate these substances, as DEA Deputy Assistant Administrator Rannazzisi (2011) stated, this law “is not adequate to address the problem” (p. 12).¹ It does not prevent the same substance from being sold or a new substance being created.

Generic bans

Australia and the United Kingdom have implemented generic bans to avoid the game of whack-a-mole (Stevens & Measham, 2014). Generic bans prohibit whole families of substances based on “a core molecular structure, which does not... have to be psychoactive” (King, Nutt, Singleton, & Howard, 2012, p. 3) and bans all substances that are derivatives of that core (e.g., synthetic cannabinoids, substituted cathinones). Individual substances are not specifically identified under generic laws. Rather, chemical molecules are listed, making it less likely that the average person will know which substances are prohibited (King et al., 2012). Thus, in contrast to the analogue system in which each substance must be classified as an analogue, entire groups of substances are banned under the generic regime. As a consequence, products that are not psychoactive can be banned simply because they contain a chemical that falls within a banned group. For example, in Queensland, Australia, both avocados and cheese could be illegal since they contain tyrosine, a chemical similar in structure to many prohibited amphetamines (Barnes & Bright, 2013).

Regulation

Clearly then, “regulation deficiencies” (Khey, Stogner, & Miller, 2014, p. 30) plague individual substance, analogue, and generic prohibitions. They are often too vague, too far overreaching, difficult to apply, challenging to enforce, and ineffective at the whack-a-mole game. Thus, many drug policy scholars (e.g., Sumnall, 2013) welcome New Zealand’s novel approach to addressing designer drug use. They established a Psychoactive Substances Regulatory Authority comprised of experts (not politicians) in their Ministry of Health, much like a regulatory regime for medicines, hazardous products, tobacco, and food. The newly enacted Psychoactive Substances Act of 2013 creates a regulatory framework to grant licenses to those seeking to import, export, manufacture, or sell a designer drug product if toxicology and clinical trials (6–12 months) show the substance has “low risk of harm” to users (Wilkins, Sheridan, Adams, Russell, Ram, & Newcombe, 2013, p. 1). Each substance must not exhibit:

risks, if any, to public health; the potential for use of the product to cause death; the ability of the product to create physical or psychological dependence; the likelihood of misuse of the product; and the potential appeal of the product to vulnerable populations. (Sumnall, 2013, p. 1077)

If such risks are shown, then the substance will be criminalized. If a license is granted and risks and harms that were not evident during the clinical trials are experienced once the product is on the market, the licenses will be revoked and the products will be recalled. Regulatory controls will also be placed on the availability and marketing of the approved substances, such as prohibiting direct advertising to users, even online, and requiring a full list of ingredients on all products.

Some are skeptical and others are concerned about this new regime. It is possible that New Zealand may become “ground zero” for designer drugs that are now exported around the globe. It is also possible that the burden of obtaining a license (i.e., the cost of the application and the cost of clinical trials) is so great that manufacturers market and sell their products on the Internet around the globe. And, then, New Zealanders may continue to purchase the unregulated (perhaps cheaper) designer drugs online.

While the effect of New Zealand’s innovative policy remains unclear, it is considered a “model for drug policy reform” (McCullough, Wood, & Zorn, 2013, p. 14). First, it treats each substance as a commodity that requires regulation to ensure the safety of the consumer (e.g., Seddon, 2014). Sumnall (2013) aptly states that prohibitionist policies, such as the UK 1971 Misuse of Drugs Act, have “much less impact on consumer safety and public health” (p. 1076). Second, this regime permits the recreational use of drugs so long as the product poses minimal harms to consumers. (Unfortunately, already prohibited substances will not have the ability to be re-evaluated.) Finally, this policy appears grounded in the fact that drug use is a “pleasure driven” behavior rather than a pathological one (Sumnall, 2013, p. 1077), which can help shift the discourse around drug use.

Conclusion

Designer drugs pose three unique challenges to societies. First, they are difficult to define and have various pseudonyms: NPS, research chemicals, synthetics – to name a few. A variety of natural, semi-synthetic, or synthetic drugs with stimulant, hallucinogenic, dissociative, and/or other effects are classified as designer drugs. For example, fentanyl, NBOMe, MDMA, and anabolic steroids have been tagged designer drugs. Second, the *perceived* rapid emergence and epidemic usage of these substances, and their synthetic and, hence, unnatural nature, incite fears of their possible primitive, supernatural, or superhuman effects that result in violence. Users have been described as zombies and uncontrollable. Third, controlling the manufacture and availability of designer drugs is akin to playing a game of whack-a-mole or cat-and-mouse. Countries are banning one designer drug only to identify a new one to take its place. They are banning analogues and families of compounds in unsuccessful attempts to win those games. But, new designer drugs continue to emerge, while old designer drugs re-emerge. Even though designer drug use often remains among a niche group (synthetic cannabis may be the exception) and rarely reaches epidemic proportions, given the history of drug use in general and designer drug use specifically, manufacturers, dealers, and users will proceed to seek out psychoactive substances. Perhaps, then, New Zealand's regulatory approach, which provides licenses to manufacturers and sellers, monitors the harms of substances, and prioritizes the health of the consumer is the most sustainable and suitable design for addressing designer drugs.

Note

- 1 Because anabolic steroids are Schedule III substances, the 1986 Analogue law does not even apply to these substances. In 2004, the U.S. implemented the Anabolic Steroid Control Act (2004, S2195), which is essentially an analogue law for testosterone. Under this Act, any substance that is chemically and pharmacologically similar to testosterone, but is not dehydroepiandrosterone or an estrogen, progestin, or a corticosteroid is classified as a Schedule III drug. Promoting muscle growth does not have to be an effect of the substance.

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Part III

Explaining the Place of Drugs in Society

Drug Use as a Socially Constructed Problem

Peter J. Venturelli

Throughout the years of studying and writing about drug use as a social problem, I never specifically focused on how and what goes into the purported instances and occurrences of drugs and drug use. I assumed that what I was examining regarding drugs and drug use was factual and spent most of time reading, compiling, and analyzing latest trends and statistics, pondering over sociological, psychological, and biological theories needed to explain drug use, interviewing drug users and nonusers, drug therapists, and countless other officials working in this field. I focused on the objective factors such as type of drug, amount and method of ingestion, level of toxicity, social, psychological, and demographic characteristics, including age, social background, gender, race, and ethnicity, poverty versus wealth, and the like.

While these are all commendable and important factors, this does not examine who is defining the problem of drug use. In essence, I overlooked examining the composition of the social phenomena comprising how drugs and drug usage are framed (Goffman 1974). Frame analysis is defined as “basic cognitive structures which guide the perception and representation of reality ... On a very banal level, frames structure, which parts of reality become noticed” (Koenig 2005, 1). Specifically, the larger question is how were the issues socially constructed? There are many factors and findings about drug use that are never questioned. To what extent are these “factors” assumed real from the “evidence” gathered from surveys, observations, interviews, participant observation, open-ended in-depth interviews, ethnographies, and other field methods in sociological as well as psychological research without considering how the particular outcomes have initially been framed?

In this research, I will focus on the following: (1) how social constructionism offers a unique grasp in understanding the etiology of the drug use as a socially

defined “problem” by discussing the major concepts constructionists use for understanding how initially drug use becomes a social problem, (2) how, from a social constructionist perspective, recreational drug use is interpreted depending on the frame used, and (3) how major images of drug users are created.

Drug Use: Constructionist Perspective

Social construction theory applied to drug use rests on four assumptions. First, drug use, like most behaviors, does not have any steadfast inherent definitions. Definitions are socially subjective, constructed and presented as problematic. Second, drug use is basically a label (Becker 1963; Lemert 1951; Matza 1969; Mead 1934) created, manufactured, and reified by authority and the power of persuasion to receptive audiences. Third, drug use is presented to audiences as devious behavior that violates normative standards of drug-free consciousness. And fourth, information about drug use and drug users is derived from “trusted” subjective perceptions and observations, government initiated information, and reproduced as factual information from the media (Thio, Taylor, and Schwartz 2013).

From a social constructionist perspective, drug use is nothing more than a joint human enterprise between actors and audiences (paraphrased from Henry 2009). Transactions are interchanged during joint action (Goffman 1971) between actors and audiences. In regard to drug use, exchanges between users and purported non-users occur. Purported nonusers possess authority and power in this exchange with the ability to frame (Goffman 1974) drug use. Key processes responsible for framing (Goffman 1974) (defining) the drug use include: relativity principle, claims-making and/or claims-makers, amplifications by social reaction, moral entrepreneurs, typifications, and drug scares.

Major Laws Affecting the Perception of Drug Use

In regard to drug use, the *relativity principle* advocated by constructionists focuses on how drug use becomes defined as deviant relative to given norms or standards of behavior. In the United States, drug legislation and drug laws form our legalistic stance on drug use. Drug laws clearly state that any illicit nonmedical recreational drug use violates enacted drug laws [see Goode (1997, 23) with reference to Abadinsky (1989, 5)].

Drug policy in the United States has been guided by ‘commonly shared simplifications’ – in particular, the belief that ‘drug problems are largely attributable to morally compromised or pathological individuals who were not properly inculcated in childhood with normal American values such as self control and respect for the law. These individuals must be disciplined and punished with authorities to deter them from involvement (for pleasure or profit) with inherently dangerous, addicting drugs’ (quoted in Abadinsky 2008, 365).

Specific laws making recreational drug use illegal include the Harrison Act (1914), Heroin Act (1924), Narcotics Control Act (1956), Drug Abuse Control Amendments (DACA) (1965), Comprehensive Drug Abuse Prevention and Control Act (1970), Methadone Control Act (1973), US Drug Enforcement Administration (DEA) Controlled Substance Analogue Enforcement (Designer Drug) Act (1986), Drug Addiction Treatment Act (2000), and the Secure and Responsible Drug Disposal Act (2010) (see Table 9.1 for summaries, coverage, and intent of legislation).

The Harrison Act in 1914 was the first major legal effort by the federal government to regulate and control the production, importation, sale, purchase, and distribution of what was perceived and defined as addictive substances and this Act served as the

Table 9.1 Federal laws associated with the control of narcotics and other abused drugs

<i>Date</i>	<i>Name of legislation</i>	<i>Summary of coverage and intent of legislation</i>
1914	Harrison Act	First federal legislation to regulate and control the production, importation, sale, purchase, and free distribution of opium or drugs derived from opium.
1924	Heroin Act	Made it illegal to manufacture heroin.
1956	Narcotics Control Act	Intended to impose very severe penalties for those convicted of narcotics or marijuana charges.
1965	Drug Abuse Control Amendments (DACA)	Adopted strict controls over amphetamines, barbiturates, LSD, and similar substances, with provisions to add new substances as the need arises.
1970	Comprehensive Drug Abuse Prevention and Control Act	Replaced previous laws and categorized drugs based on abuse and addiction potential as well as therapeutic value.
1973	Methadone Control Act	Placed controls on methadone licensing.
1973	US Drug Enforcement Administration (DEA)	Remodeled the Bureau of Narcotics and Dangerous Drugs to become the DEA
1986	Analogue (Designer Drug) Act	Made illegal the use of substances similar in effects and structure to substances already scheduled.
2000	Drug Addiction Treatment Act	Allowed qualified physicians to dispense or prescribe specially approved Schedule III, IV, and V narcotics for the treatment of opioid addiction in medical treatment settings, rather than limiting it to specialized drug treatment clinics.
2010	Secure and Responsible Drug Disposal Act	Allowed consumers to give controlled substances to specially designated individuals, such as law enforcement officials, for disposal

foundation and reference for subsequent laws directed at regulating drug use and abuse. An even tighter form of norm control was the Comprehensive Drug Abuse Prevention and Control Act, which, as Table 9.1 shows, replaced previous laws and categorized drugs based on abuse and addiction potential as well as therapeutic value. In particular, the Comprehensive Drug Abuse and Prevention and Control Act in 1970 largely defines the ways in which law enforcement agencies “deal” with substance “abuse.” This Act specifically divided substances with abuse potential into categories based on the degree of their abuse potential and makes a determination about their clinical usefulness. Referred to as schedules, the classifications range from I to V. Schedule I substances are drugs that have (1) a high potential for abuse, (2) no currently accepted medical use in treatment in the United States, and (3) a lack of accepted safety for use of these drugs. Drugs under this schedule include heroin, LSD, marijuana, ecstasy, and psilocybin.

Schedule II drugs (1) have high abuse potential, (2) are approved for medical purposes, and (3) can be prescribed with restrictions, even though abuse of these drugs may lead to severe psychological or physical dependence; some examples listed under Schedule II include fentanyl, morphine, oxycodone, and methylphenidate (Ritalin).

Schedule III are drugs that (1) have less potential for abuse than the drugs or other substances in Schedules I and II, (2) are currently accepted for medical use for treatment in the United States, and (3) can be abused and are drugs that may lead to moderate or low physical dependence or high psychological dependence. Examples listed under Schedule III are aspirin/hydrocodone, testosterone, acetaminophen/hydrocodone, and dronabinol (Marinol)¹ [which is a *synthetic* form of delta-9-tetrahydrocannabinol (delta-9-THC)].

Schedule IV drugs have (1) low potential for abuse relative to the drugs in Schedule III, (2) currently have accepted medical use for treatment in the United States, and (3) abuse of these drugs may lead to limited physical dependence or psychological dependence in comparison to drugs in Schedule III. Zolpidem (Ambien CR), lorazepam (Ativan), propoxyphene (Darvon), and diazepam are examples of drugs listed under Schedule IV.

Schedule V drugs have (1) low potential for abuse relative to the drugs in Schedule IV, (2) accepted medical use in treatment in the United States, and (3) abuse potential in that these drugs may lead to limited physical dependence or psychological dependence in comparison to the drugs in Schedule IV. Codeine/phenylephrine (Ala-Hist AC), codeine/promethazine, and codeine/phenylephrine/promethazine (Phenergan VC with Codeine) are examples of drugs listed under Schedule V.

Finally, there are published detailed Federal Trafficking Penalties broken down by types of illicit drugs, violation of specific drug schedule, quantity of drug confiscated, and minimum sentencing guidelines.

Strong support for the *relativity principle* creating legal norms is abundantly clear in examining the federal drug laws in Table 9.1 as well as the two major federal drug laws that clearly define and have created “controlled substances.”

Another important and applicable constructionist concept regarding the problem of drug use is *moral entrepreneur*, which is defined as:

A moral entrepreneur is an individual, group, or formal organization that takes on the responsibility of persuading society to develop or to enforce rules that are consistent with its own ardently held moral beliefs. Moral entrepreneurs may act as rule creators by crusading for the passage of rules, laws, and policies against behaviors they find abhorrent, or as rule enforcers by administering and implementing them (De Young 2014, 1).

Originally conceptualized by Becker (1963), rule makers are the moral entrepreneurs and moral crusaders who “typically believe that their mission is a holy one” (Becker 1963, 10). In the early history of drug laws, a key example was Harry Anslinger, who was the first appointed head of the Bureau of Narcotics in 1931 and subsequently became responsible for the enforcement of marijuana laws. Though Anslinger initially believed the problem of marijuana use was slight when he first took office, by 1936 he claimed that the increase in the use of marijuana was of great national concern (Anslinger and Cooper 1937). Anslinger set up an informational program that ultimately led to the federal law that banned marijuana. An example of a sensationalized statement by Anslinger’s campaign to outlaw marijuana is:

What about the alleged connection between drugs and sexual pleasure? ... What is the real relationship between drugs and sex? There isn’t any question about marijuana being a sexual stimulant. It has been used throughout the ages for that: in Egypt, for instance. From what we have seen, it is an aphrodisiac, and I believe that the use in colleges today has sexual connotations. (Anslinger and Cooper 1937, p. 19)

In addition, during this time, several magazines reported that marijuana was partly responsible for crimes of violence. In 1936, in *Scientific American*, for example, it was reported that “marijuana produces a wide variety of symptoms in the user, including hilarity, swooning, and sexual excitement. Combined with intoxicants, it often makes the smoker vicious, with a desire to fight and kill” (“*Marijuana Menaces Youth*” 1936, p. 151). A famous poster of the day, called “The Assassination of Youth,” was effective in molding attitudes against drug use. Finally, another weapon of Anslinger “was inciting fear of Mexicans. For example, at a 1937 Congressional hearing on the proposed ... [Marijuana Tax] ... Act Anslinger placed in his official testimony a letter from the editor of the *Alamosa Daily Courier*, in south-central Colorado” (Kopel 2010):

I wish I could show you what a small marihuana cigarette can do to one of our degenerate Spanish-speaking residents. That’s why our problem is so great; the greatest percentage of our population is composed of Spanish-speaking persons, most of who[m] are low mentally, because of social and racial conditions (Kopel 2010).

“In a letter to Congress in support of ... [the Marijuana Tax] ... Act, Mrs. Hamilton Wright, who had been appointed a ‘special representative’ of Anslinger’s Bureau of Narcotics wrote:” (Kopel 2010)

We know it as the ordinary hemp weed which (sic) can be grown in any backyard in any State in the Union. Its use as a stimulant or narcotic is, however, of recent date. It was introduced about 10 years ago by Mexican peddlers in the form of cigarettes. Its use has spread like wildfire and is associated with crime in its most vicious aspects. (Kopel 2010)

As a result of Anslinger's role as a moral entrepreneur and a number of media campaigns, Congress passed the Marijuana Tax Act in 1937, resulting in a collective belief and definition of marijuana use. Anslinger succeeded in his efforts to demonize marijuana use by his ability to create and garner legal and public support against the possession and use of this drug. Hilgartner and Bosk (1988) reminds us that Anslinger's ability to sway public opinion relied on news saturation successfully creating collective definitions that were nurtured, defined, and framed in various public arenas:

The collective definition of social problems occurs not in some vague location such as society or public opinion but in particular public arenas in which social problems are framed and grow. These arenas include the executive and legislative branches of government, the courts, made for TV movies, the cinema, the news media (television news, magazines, newspapers, and radio), political campaign organization, social action groups,

It is in these institutions that social problems are discussed, selected, defined, framed, dramatized, packaged, and presented to the public. (Hilgartner and Bosk 1988, 58-59)

Another important concept in constructionist theory that elaborates the notion of moral entrepreneurship is *claims-making*, which is "the activities of individuals or groups making assertions of grievances and claims with respect to some putative conditions" (Spector and Kitsuse 1977, 75). In the examples above, take note of the demeaning and often racist terms associated with marijuana use. Not only did Anslinger emphasize such terms as "dope fiends," "reefer smoker(s)," hopeless insanity and emphasis on the negative effects of marijuana usage depicted in speeches, testimonies before Congress, writings, and other public speeches, but he described highly exaggerated effects of this drug in "Reefer Madness," which was a narrated film exaggerating how cannabis smokers reacted to the effects of marijuana with uncontrollable confusion, laughter, and spontaneous acts of violence. "Today the film is shown on college campuses as a joke" (Kopel 2010); however, back in the 1930s most viewers in the US population who were unfamiliar with the alleged symptoms and effects of marijuana became believers about the dangerous effects of this drug. Kopel's review of "Reefer Madness" ends with a final assessment:

America did suffer from reefer madness in the 1930s. The first victims of reefer madness were the legislators who let themselves be panicked into enacting repressive laws based on mean-spirited hostility to Mexicans, blacks, and young people. The continuing victims of reefer madness are the millions of decent Americans who have been punished as criminals because of the laws enacted by the legislative dupes of Harry Anslinger and his fellow bigots. (Kopel 2010)

Three additional concepts used by social constructionists and applicable to Anslinger's moral crusade against marijuana use include *typifications*, *amplification by social reaction*, and *drug scares*. Functioning as a claims-maker, Anslinger's moral crusade had the power to shape views on marijuana and he used political and legal typifications that occur when "claimsmakers characterize a problem's nature... . One of the most common forms is to give an orientation toward a problem ..." (Best 1989, xv). Anslinger typified the user by invoking stereotypes (typifications) of marijuana users.

In reference to crime, Henry (2009) discusses how crime is amplified by social reaction: "[crime] can produce the real consequence of career criminals as the offender becomes engulfed in coping with the stigma of a criminal identity that ultimately might lead to his or her embrace of that socially constructed identity through identity transformation" (Henry, 2009, 297). Substituting drug use in place of crime in the quote above, Anslinger created a category of drug users with many negative images, including the marijuana addict as an isolated individual insanely delirious, with characteristics of negatively portrayed disvalued racial and ethnic groups (African Americans and Mexicans), prone to sporadic violence, and morally and sexually devious. As mentioned above, marijuana use became negatively defined and transformed by his Congressional testimonies. With passage of a series of laws from 1914 through 2000 involving the use of numerous recreational drugs, the illegality of recreational drug use was legally amplified by political reaction.

Reinarman and Levine (1997) define drug scares as "desig[nated] periods when antidrug crusades have achieved great prominence and legitimacy. Drug scares are phenomena in their own right, quite apart from drug use and drug problems. Drug scares have recurred throughout the U.S. history independent of actual increases in drug use or drug problems... . Drug scares typically link a scapegoated substance to a troubling subordinate group – working-class immigrants, racial or ethnic minorities, rebellious youth" (1997, 1). Here again, we see that the drug scare, led by Anslinger vociferously touting the evils of marijuana use,² was intense.

Another example (among many) of drug scares in the mid-1980s was the use of crack:

In the spring of 1986, American politicians and news media began an extraordinary antidrug frenzy that ran until 1992. Newspapers, magazines, and television networks regularly carried lurid stories about a new "epidemic" or "plague" of drug use, especially of crack cocaine. They said this "epidemic" was spreading rapidly from cities to the suburbs and was destroying American society. Politicians from other parties made increasingly strident calls for a "War on Drugs." (Reinarman and Levine 1997, 1)

from 1986 to 1992 ... crack was portrayed as the most contagiously addicting and virulent ... diseases that were attacking American society... . major American institutions – churches, schools, media, political organizations, voluntary groups, advertisers, foundations – carried on what amounted to a huge national educational campaign about drugs in general and crack in particular. (Reinarman and Levine 1997, 3)

Words used to describe the "crack epidemic" included pervasive, dangerous, a plague similar to those that occurred during medieval times, large and growing traffic

in illegal drugs, wrecked careers, broken homes, invaded schools, incited crimes, toppled heroes, corrupted policemen and politicians, etc., etc. (Reinarman and Levine [1997, 4] quoting a June 16, 1986 *Newsweek* editorial entitled “The Plague Among Us,” p. 18). Such exaggerated accounts of news events about particular drugs are examples of what constructionists refer to as drug scares demonizing particular drugs. While two examples of drug scares/panics have been presented, historically there have been many drug scares with other drugs such as methamphetamine, heroin, prescription drugs, and ecstasy to name a few. For example: “In the late 1990s and early 2000s, a new public panic emerged about a drug that previously had received modest attention, as news sources began running prolific numbers of articles about the perceived new scourge of Ecstasy”³ (Ahrens 2013).

Finally, one account from an interview about ecstasy concludes this examination of drug scares.

It was in the summer sometime in the late 1990s when all I heard, read about, and saw on TV on our local news reports about ecstasy saturating our cities and towns. During that summer there were newscasts reporting on the death of someone attending a RAVE event and dying from Ecstasy as a result of heat exhaustion, ecstasy, and vigorously dancing. You know, now that I think about these reports it would usually be one person dying while hundreds of others were enjoying themselves at these events. Family members of the deceased would be interviewed and mourn the death of the loved one who died from ingesting this drug. As the news was saturated with stories of this drug, I also recall having the feeling that in most neighborhood bars drug dealers were selling ecstasy across the country. One night I went to several bars and thought that I would spot drug dealers selling this drug to patrons and that if I carefully observed, I would see an illegal transaction occurring. Throughout the night, I saw nothing at all as I made my visits to three bars and when I woke up the next morning, I suddenly realized that all the reports about Ecstasy were more than likely totally overblown. (From Venturelli’s research files, February 20, 2014, 53-year-old male, medical intern in a mid-sized Midwestern town)

In concluding what has been stated above, the social constructionist terms relativity principle, moral entrepreneurs, claims-making, typifications, amplification by social reaction, and drug scares have been used to define drug use, resulting in the enactment and support of major drug laws legally prohibiting drug use, and drug scares in particular result in creating fear and support of the illegality of drug use behavior.

Sociological and Psychological Framing of Drug Use and Drug Users

In addition to understanding how framing, the relativity principle, claims-making, amplifications by social reaction, moral entrepreneurs, typifications, and drug scares have underpinned the formation of drug laws, constructionist theory can also illuminate how images of drug users are also socially constructed and how, in effect, the

images of drug users share a symbiotic relationship with the “atmosphere” created by the illegality of drug use.

Our images and perceptions of drug users are often socially constructed sociologically and psychologically. Beginning with the most concrete obvious images, a Google search of “images of drug use” shows a preponderance of graphic photos of before and after methamphetamine drug use and a minority of heroin user photos dominating the first page of listed web sites. Nearly all of these photos show severe facial deterioration. Other photos graphically depicting the negativity of drug use include hypodermic needles, injection into the skin, incapacitated drug users lying on floors or sidewalks, pills coming out of prescription drug containers, people with their hands over their face (more than likely experiencing the effects of the drugs they have taken), puffing on a crack pipe, and the like. Captions under many of the drug-use photos include words like shocking, drug addiction, addict, faces of addiction, horror of use, etc., etc. Photos graphically show severe facial deterioration. Further, in looking at drug textbooks, the index in *Drugs and Society* (2015), under the letter “A,” pages are overwhelmingly referenced under such headings as addiction,⁴ disease, acquaintance rape and alcohol use, adolescents and addiction, children of alcoholics and adult children of alcoholics, gangs and drugs, HIV/AIDS rates, marijuana use and abuse, patterns of drug use, reasons for drug use, sexual violence and drugs, suicide, and approximately 800 additional major page references for subheading entries from A through Z with nearly 95% listing page numbers about the negative effects regarding drug use and drug users. Clearly this quick check of one index in one textbook in the field is overwhelmingly primarily focused on the negative effects and outcomes of drug use and drug users. Two additional top-selling drug texts examined in similar fashion yields very similar findings. While certainly not diminishing the negative effects of drug use, constructionist theory would point to the fact that college and university students using these drug texts, often as required reading, are learning about drugs and drug use as highly problematic behavior.

Sociological, as well as psychological, definitions of drugs and drug use are often discussed in terms of: legal vs. illegal use; recreational vs. medical usage; stereotypes and images of drug users; use in professions and occupations; income, social class, gender, ethnicity and race, age and use; mental illness and drug use; drug dependence; drug use as compulsive behavior; how drug use leads to abuse; drug use as a disorder (American Psychiatric Association 2013); how widespread is drug use; types of drug users; drugs, crime, and violence; definition and models of addiction; factors contributing to addiction; low-risk and high-risk choices; drug laws and deterrence; factors in controlling drug use; drug courts; strategies for preventing drug abuse (supply reduction, demand reduction, and inoculation strategies); drug legalization debate; drug testing; and pragmatic drug policies, to name a few sociological topics of drug use.

The *Diagnostic and Statistical Manual of Mental Disorders*, fifth edition (*DSM-5*), published by the American Psychiatric Association (APA 2013), known as the “bible” for diagnosing psychological disorders, differentiates between *substance use*

disorders and *substance-induced disorders (addictive disorders)*. Substance-related and addictive disorders largely stem from activation of the reward pathways in the brain (which provide the pleasurable feeling from the high that a drug produces) and/or⁵

... lower levels of self control, which may reflect impairments of the brain inhibitory mechanisms, may be particularly predisposed to develop substance use disorders, ... The following conditions may be classified as substance-induced: intoxication, withdrawal, and other substance/medication-induced mental disorder (psychotic disorder, bipolar and related disorder, depressive disorders, anxiety disorders, obsessive-compulsive and related disorders, sleep disorder, sexual dysfunctions, delirium, and neurocognitive disorders). (APA 2013, p. 481)

The diagnosis of substance use disorder⁶ includes the following:

- *Pharmacological*: The diagnosed individual may take the substance in larger amounts or over a longer period of time than was originally intended.
- *Excessive time spent obtaining the substance*: The individual may spend a great deal of time obtaining the substance, using the substance, or recovering from its effects; in severe cases, nearly all of the individual's daily activities revolve around the substance.
- *Craving*: The user has an intense desire or urge for the drug (cannot think of anything other than securing and using the drug).
- *Social impairment*: The individual fails to fulfill major role obligations at work, school, or home despite having persistent or recurrent social or interpersonal problems caused by the effects of the substance; this includes withdrawal from personal and/or family obligations and/or hobbies and interests.
- *Risky use of the substance*: The individual may continue substance use despite knowledge of having a persistent or recurrent physical or psychological problem. He or she is unable to abstain from using the substance despite difficulties in using.
- *Tolerance*: The individual needs increased amounts or else they experience a diminished effect when using the same amount of the substance.
- *Withdrawal*: "Withdrawal ... is a syndrome that occurs when blood or tissue concentrations of a substance decline in an individual who had maintained prolonged heavy use of substance" (APA 2013, p. 484). (Often after developing withdrawal symptoms, "the individual is likely to [resume consuming] the substance to relieve the symptoms ... of withdrawal" (APA 2013, p. 484).)

An additional final definition of addiction is also noteworthy. The National Institute on Drug Abuse (NIDA) defines addiction as "a chronic, relapsing brain disease that is characterized by compulsive drug-seeking and use, despite harmful consequences. It is considered a brain disease because drugs change the brain—they change its

structure and how it works. These brain changes can be long lasting and can lead to the harmful behaviors seen in people who abuse drugs” (NIDA 2008a, p. 5).⁷

According to DSM-5, any nonmedical use of drugs is clearly diagnosed as a disorder and once drug use occurs it is clearly an ailment in need of therapy. While not judging DSM-5’s diagnosis, from a constructionist perspective, how drug use is therapeutically defined is noteworthy. Further, the definition of substance use disorders and substance-induced disorders contains an abundance of negative outcomes, such as addictive disorders, lower levels of self-control, impairments of the brain, intoxication, withdrawal including mental, psychotic, bipolar, depressive, anxiety, obsessive-compulsive, and sleep disorders. Also included in the diagnosis of substance use disorder, many types of compulsion are also defined, such as: loss of control over the amount of the drug, excessive time spent obtaining the drug, craving, social impairment, risky use, tolerance (where more of the drug is needed to achieve its effects), and the deleterious effects of withdrawal from the drug. In its definition of addiction, NIDA defines addiction as “a chronic, relapsing brain disease, that is characterized by compulsive drug seeking and use, despite harmful consequences” (Volkow 2010, 5). This definition emphasizes addiction with the words “chronic,” “relapsing brain disease,” “compulsive drug seeking,” and “harmful consequences.”

In essence, psychologically, *all* nonmedical use of illicit drugs is negative behavior with disastrous consequences and does not include perspectives from the consumers of these drugs and how they define and perceive their drug use. There is an absence of perspectives from “insiders” (defined as drug users and drug use sympathizers) *in contrast with* “outsiders” (defined as “those who do not approve of and/or use drugs” [Hanson, Venturelli, and Fleckenstein 2015, 5]). Any mention and discussion of “insiders” is nonexistent and excluded when examining a reputable drug text and how drug use is handled in the DSM-5.

Institutional Government Agencies Framing of Drug Use and Drug Users

Table 9.2 lists primary information and research on drug use that is funded by the federal government and is financially supported by taxpayers. Public information published and displayed on these web sites constructs a particular reality that all nonmedical use of drugs is socially, psychologically, and medically problematic, leading to injurious and/or detrimental consequences.

The information on these web sites defines and details the negativity of drug use by employing moral entrepreneurship, claims-making, amplifications by social reaction, and typifications of the drug users. Oftentimes this information is “factually” conveyed by detailing the latest research findings, autobiographical accounts, statistical information gathered from surveys, warnings from “experts,” and findings tallied from the casualties in using particular drugs. Though examples are plentiful,

Table 9.2 Major public and private agencies publishing drug use information

American Alcoholics Anonymous (AA)
American Council on Alcoholism
Council for Drug Education (ACDE)
Arrestee Drug Abuse Monitoring Program (ADAM)
Center on Addiction and the Family (COAF)
Center on Addiction and Substance Abuse at Columbia University (CASA)
Centers for Disease Control (CDC)
Mothers Against Methamphetamine (MAMA)
National Narcotics Anonymous (NA)
Center on Substance Abuse and Child Welfare (NCSACW)
National Council on Alcoholism and Drug Dependence, Inc. (NCADD)
National Institute on Alcohol Abuse and Alcoholism (NIAAA)
National Institute on Drug Abuse (NIDA)
National Institutes of Health (NIH)
National Mothers Against Drunk Driving (MADD)
National Organization on Fetal Alcohol Syndrome (NOFAS)
National Survey on Drug Use and Health (NSDUH)
Office of Applied Studies (OAS/SAMHSA)
Partnership for a Drug-Free America
RAND Drug Policy Research Center (DPRC)
Research Institute on Addictions (RIA)
SAMHSA Fetal Alcohol Spectrum Disorders Center for Excellence (FASD Center)
Substance Abuse and Mental Health Services Administration (SAMHSA)
Streetdrugs.org
Teen Challenge World Wide Network
Treatment Research Institute (TRI)
United Nations Children's Fund (UNICEF)
United States Department of Health and Human Services (USDHHS)
U.S. Department of Health and Human Services, Administration for Children and Families (ACF/HHS)

one example of claims-making includes a litany of negative outcomes regarding drug addiction as a brain disease resulting from “the toxic effects and addictive properties of abusable drugs” (NIDA 2013, 1). The excerpt below is from the current director of NIDA at the National Institutes of Health:

Dr. Volkow's work has been instrumental in demonstrating that drug addiction is a disease of the human brain. As a research psychiatrist and scientist, Dr. Volkow pioneered the use of brain imaging to investigate the toxic effects and addictive properties of abusable drugs. Her studies have documented changes in the dopamine system affecting, among others, the functions of frontal brain regions involved with motivation, drive, and pleasure in addiction. She has also made important contributions to the neurobiology of obesity, ADHD, and aging. (NIDA 2013, 1)

As director of a major drug agency monitoring and researching drug use and abuse across society, Dr Volkow uses a neurobiological approach to define and research the causes of drug use and abuse. While neurobiology is certainly a very important subdiscipline of biology, drug use and abuse is hardly limited to this subdiscipline since drug use and abuse has deep sociological and psychological foundations and ramifications.

Two other examples of claims-making, amplifications, and moral entrepreneurship:

Marijuana is of course on people's minds these days, and we know that use of that drug is related to perceptions of its safety. A growing percentage of adolescents see marijuana as harmless, possibly being influenced by all the public debate around legalization and the contentious issue of "medical marijuana." (Attaching the word "medical" to a drug makes it seem like it couldn't be bad for you.) These young people are unaware of the negative effects marijuana can have on the developing brain and on their long-term well-being. (NIDA 2014a, 1)

And,

According to the most recent Monitoring the Future survey, over 40 percent of high school seniors reported using an illegal drug at some point in the past year; 15 percent reported abusing a prescription drug; and nearly 23 percent reported smoking marijuana in the past month. Nearly 7 percent of seniors said they smoke marijuana regularly. (NIDA 2014a, 1)

There are also news briefs detailing some discovery of a drug as an antidote that can be used in treating or curtailing the effects of a particular drug by blocking the "high" derived from a recreational drug of choice. Naloxone, an opioid antagonist that can reverse or block the effects of other opioids, is an example (NIDA 2014b, 1). Further, from time to time, drug scares are created on many of these web sites by detailing some abrupt fluctuations in the numbers of drug users using a particular drug or some other calamitous result such as death, temporary insanity, or some other type of violent behavior resulting from a particular drug.

Among many, drug scares have included such drugs as marijuana, *Salvia divinorum*, cocaine, "bath salts," LSD, vaping vapors, to name a few (Sullum 2013). For example, regarding marijuana the author cites that:

Prohibitionists commonly warn that it's dangerous even to discuss legalizing marijuana, whether for medical or general use, because such talk sends "the wrong message" to the youth of America, encouraging them to smoke pot. If so, you might expect that the legalization of marijuana in Colorado and Washington approved by voters more than a year ago, would have a noticeable impact on marijuana use by teenagers. Yet the latest data from the government-sponsored Monitoring the Future Study, released earlier this month, indicate that teenagers observed the momentous events in Colorado and Washington, absorbed the deleterious message supposedly sent by legalization, and continued smoking pot at pretty much the same rates as before. (Sullum 2013, 3)

In addition to scare scenarios involving many types of drug, other aspects of drug use have been prone to drug scares. In September 2013, the CDC stated that between 2011 and 2012 “the percentage of teenagers who had tried electronic cigarettes doubled... . Many teens who start with e-cigarettes may be condemned to struggling with a lifelong addiction to nicotine and conventional cigarettes, ... Friedman ... [director of the CDC]... suggested that fear had already materialized, asserting that “many kids are starting out with e-cigarettes and then going on to smoke conventional cigarettes” (Sullum 2013,4). This claim by this claims-maker was not supported by the CDC’s data. “In fact, none out of 10 high school students who reported vaping ... [smoking e-cigarettes]... in the previous month were already cigarette smokers suggesting that the increase in e-cigarette consumption might signal successful harm reduction. Last month the CDC reported additional NYTS data ... [National Youth Tobacco Survey]... that further undermine Frieden’s claim, showing that smoking among teenagers *fell* as vaping rose” (Sullum 2013, 4).

Such claims-making, typifications, the relativity principle, and amplifications frequently occur, promoting and creating a definition of the situation (Thomas 2002) resulting in drug scare scenarios. This is an example of how constructionist concepts illuminate and capture the essence of how drugs and drug use are framed.

Casualties of Drug War Ideology, Prohibitionist Legal Philosophy, and Othering Drug Users

Historically, in the late 1960s recreational drug use dramatically increased under the Johnson Administration “among young, white, middle class Americans” (WGBH Educational Foundation 2014) in response to political unrest throughout the United States resulting from the Vietnam War. “Nixon became president in 1969 and he responded to the dramatic increase in illicit drug use when in June 1971, President Nixon declared a ‘war on drugs’” (Drug Policy Alliance 2014), saying drugs “was public enemy number one in the United States” and he “dramatically increased the size and presence of federal drug control agencies, and pushed through measures such as mandatory sentencing and no-knock warrants. Nixon temporarily placed marijuana in Schedule One, the most restrictive category of drugs” (Drug Policy Alliance 2014). Finally the 1980s and 1990s were marked by drug hysteria over the crack *epidemic* and the “skyrocketing incarceration rates [developed from] ... a political hysteria about drugs that led to the passage of draconian penalties in Congress and state legislatures that rapidly increased the prison population.⁸ In 1985, during President Regan’s presidency, the proportion of Americans polled who saw drug abuse as the nation’s ‘number one problem’ was just 2–6 percent” (Drug Policy Alliance 2014). This clearly meant that 98% to 94% did not see drug abuse the nation’s “number one problem.”

From this brief segmented review of how drugs and drug usage have been framed and defined, the major concepts in constructionist theory, claims-making, promotion of drug scares, the relativity principle (Nixon’s success in increasing the number

of federal control agencies and pushing for severe laws punishing drug users), moral entrepreneurship, and amplifications by social reaction, are clearly evident.

Othering Drug Users and Prohibitionist Philosophy

There is process known as “othering” that is complementary to social construction. Othering is defined as “any action by which an individual or group becomes mentally classified in somebody’s mind as ‘not one of us’” (Blog at WordPress.com. |The Chunk Theme 2011). Engelund (2011) states that Michel Foucault emphasizes that othering is connected with power and knowledge in that othering “implies a hierarchy, and it serves to keep power where it already lies. Colonialism is one such example of the powers of othering” (Engelund 2011). Othering involves social distancing, often occurring through “the political consciousness and social ideologies that are forged through the intersection of media message and images, official announcements, and community discursive activities; demonized understandings of drug users emerge that serve as a rationale not only for state punishment but for segregation, discrimination, and ethnic inequality as well” (Mosher and Akins 2007 in Singer and Page 2014, 19). The connection with power is *quasi* hegemonic, involving domination over the discredited drug violator.

Currently held definitions and the labeling of drug users are discriminatory. When drug users are othered, they are not only demonized, but also categorically discriminated and labeled by the status quo. The realities of why and what leads to segments of the population using drugs is rarely taken into consideration by policy makers, legislators, US government drug information web sites, the mass media reporting drug use, and the receiving audiences defining drug use and drug addiction.

both the American National Institute on Drug Abuse (NIDA) and the European Council will not issue official documents which even use the term “drug use.” In Europe one will always see ‘drug misuse,’ in the States ‘drug abuse.’ This is not science; it is a way of underlining the ideological point that non-abusive use of illicit drugs cannot exist. When thinking about alternative methods of drug control it is absolutely decisive that this mistake be corrected. There is now a wealth of literature supporting the notion that drugs like opium, morphine, heroin, alcohol, coca, cocaine, smokable cocaine (and crack) and cannabis are used by individuals who maintain or regain control. Only when we dare to give up the dogma of the intrinsic powerlessness of humans to control these drugs, realistic and humane new drug legislation may be developed. New drug control policies should allow users to strengthen their own capacities for control and offer harm-reduction measures to those who do abuse. (Cohen 1993, 4)

The absence of any consideration for the victim is because the United States has adopted a prohibitionist legal philosophy using the enforcement of laws administered by the criminal justice system. Transgressors violating drug laws are apprehended, charged, punished, and labeled law violators. Prohibitionist philosophy

frames the othering of drug users. Violators undergo a demonizing degradation ceremony (Garfinkel 1956) and are placed into a “we” versus “they” binary category. Labeling theory is clearly applicable to these transgressors violating legally based norms.

In tracing the history of prohibition, Cohen (1993, 2) offers an interesting perspective on the origins of prohibition:

Try to think of prohibition as if it were a major misunderstanding based on the limited knowledge of drugs available in the 18th and 19th centuries, a phase in history that will pass. Present day prohibition might then be understood as a fossil, an anachronism. It survives in our time because it serves and maintains political and symbolic functions it has acquired since its inception. I hypothesize that drug prohibition in itself is just one of the now fossilized products of the British industrial revolution, 18th-century Christian morality, and 17th-century Enlightenment ideas.

Further, in regard to drug use, Cohen (1993, 4) states that:

behind our present system of drug prohibition is the idea that states can outlaw the desire for drugs, old or new. The ingestion of chemicals to alter consciousness has been part of every culture and epoch in human history, and this is likely to become more so as technologic change races ahead. Thus, the idea of a drug-free society is just as ridiculous as the idea of a crime-free society, or a society free of broken marriages. The very best one can do is mitigate the ill effects of drugs, crime, or broken marriages for all concerned.

Prohibitionist philosophy largely excludes any type of compassion for understanding the plight of offenders when they are defined and labeled as transgressors. Apprehended and accused transgressors of drug laws find themselves in a confrontational relationship with established legal authority. Unlike harm-reduction political philosophy, prohibitionist philosophy is one sided. Harm-reduction philosophy is nonjudgmental, focusing on reducing the harm experienced by the drug user and/or abuser as well as the harm to society. It is a very broad and comprehensive political philosophy that involves society-wide prevention. In comparing these two legal and political philosophies, prohibitionist philosophy represents the opposite end of the spectrum.

Prohibitionist philosophy precludes important questions about drug use because its method of compliance is punishment. Many overarching and important questions never surface. For example, such questions as: What is the nature and causes for the satisfaction and perceived rewards (real or imagined) from drug use? Why is there an emotional and social need for drug use? What are the underlying causes for illicit drug use? Are drugs the cause or merely a symptom of other underlying conditions? Why do drug users violate drug laws at a tremendous legal cost? Why does a percentage of every population across the world search for and recreationally use drugs? Since the dawn of civilization, why has this need to recreationally alter reality by a percentage of the population occurred? Why penalize the illicit drug user for

his/her use of certain types of drug while licit drugs do not violate drug use laws? Why are the licit drugs, alcohol and tobacco (which percentage-wise are used and abused more so), legal while other drugs are illicit? What do we know about drug users who have control over their drug use and, equally important, what are these findings?

Major problems and the lack of success with prohibition are plentiful:

Domestically, state, local, and federal governments have spent tens of billions of dollars on the “war on drugs,” yet illicit drugs remain as available, as pure, and as cheap as ever. If this policy is not accomplishing its stated goal, what is it accomplishing? Is there some sort of latent agenda being served?

... They [referring to domestic, state, local and federal governments] ... have known all along that ...[prohibition]... won't work, they have good evidence from their own research studies showing that if you want to deal with substance abuse, criminalization is the worst method. The RAND report did a cost-effectiveness analysis of various drug strategies and it found that the most effective approach by far is prevention and treatment. Police action was well below that, and below police action was interdiction, and at the bottom in terms of cost-effectiveness were out-of-country efforts, such as what the US is doing in Colombia. (Chomsky 2002, 2)

In summary, the concept of othering is complementary to both labeling theory and social constructionism. The othering process involves discrimination and demonization that is structured within a power (*quasi*-hegemonic) relationship within a prohibitionist legal philosophy defining (framing) the concurrent set of binary relationships between the accused drug user and our legal system. This relationship is largely judgmental, aiming to punish the transgressor with any society-wide prevention alternatives. As mentioned above, prohibitionist political philosophy is contrary to harm-reduction philosophy, which focuses on reducing personal and societal harm.

Summary and Conclusions

This research has sought to use constructionist theory as a heuristic device for understanding how the current definition of illicit drug use and drug users has evolved and developed. In understanding how the definition of illicit drug use has evolved, core constructionist concepts have been used in order to understand the historical development of definition construction regarding this phenomenon. Hopefully, the roles of claims-making and claims-makers, amplification by moral entrepreneurs, social reaction, typifications, and drug scares used as major concepts have provided greater clarity and understanding of this definitional process.

In order to understand how drug use and drug users are defined, the following have been examined: (1) the historical, legal, and social means used to create major drug laws, (2) examination of sociological and psychological factors affecting the definition of

drug use and drug users, (3) how the latest edition of DSM-5 by the American Psychiatric Association defines drug use, (4) how drug use and drug users are defined by institutional government agencies, (5) how the casualties of the drug war ideology, prohibitionist legal philosophy, and the process of othering functions to further create these definitions, and (6) how prohibitionist legal philosophy not only frames the definitions of drug use and drug users but also excludes any type of compassion for understanding the plight of offenders when they are defined and labeled as transgressors.

In conclusion, the definitional process of drug use and drug users has multifaceted causes and in this research I have attempted to examine *some* of the major definition-producing arenas that give definitions to drug use and drug users. Hopefully, I have captured some of the major forces defining drug use and drug users.

Notes

- 1 Dronabinol (Marinol) is a synthetic form of THC and is a Schedule III drug while cannabis that has natural THC is a Schedule I drug.
- 2 Certainly a benign drug when compared to heroin and cocaine.
- 3 This source, which shows a chart “list[ing] the number of articles that have ‘ecstasy’ in the title and ‘drug’ in the body of the article appearing in the Westlaw ‘US Newspapers’ library for every year since 1984” (Ahrens 2013, 404), shows that in 2003 there were 210 articles, in 2002 there were 457 articles, and in 2001 there were 724 articles.
- 4 In this same index, for example, under addiction alone there are page references under the headings: sociological, psychological, and biological theories (causes), women and addiction, other contributing factors, cycle of addiction, danger signs, origins and models of addiction, addiction severity index, adolescents, and so on.
- 5 Quoted from Hanson, Venturelli, and Fleckenstein (2015).
- 6 In the *DSM-5*, substance abuse and substance dependence have been combined into a single condition called *substance use disorder*.
- 7 Quoted from Hanson, Venturelli, and Fleckenstein (2015).
- 8 Drug Policy Alliance (2014) states that the prison population convicted for nonviolent drug law offenses increased from 50,000 in 1980 to over 400,000 in 1997.

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Social Scientific Theories of Drug Use, Abuse, and Addiction

Stephen J. Bahr and John P. Hoffmann

Introduction

Use and abuse of alcohol and other drugs is common in the United States and throughout the world. To illustrate, in the United States 23% of all persons over age 12 consumed five or more drinks in a single sitting. Among young adults 18–25, the percentage was 40% (Substance Abuse and Mental Health Services Administration, 2013). During the past month, one in four high school seniors in the United States reported “getting drunk” (Johnston, O’Malley, Miech, Bachman, & Schulenberg, 2014).

Marijuana use is less common than alcohol use but is very prevalent. In the United States 7.3% of all persons over age 12 used marijuana during the past 30 days – 9.5% of adolescents ages 12–17, 21.3% of young adults ages 18–25, and 7% of those 26 and over (Substance Abuse and Mental Health Services Administration, 2013). Among US high school seniors, 22.7% used marijuana during the past month (Johnston et al., 2014).

Use of other illicit drugs is common also – 9.2% of Americans 12 and over used an illicit drug during the past month. Among youth ages 12–17, this percentage was 9.5% compared to 21.3% of young adults 18–25 (Substance Abuse and Mental Health Services Administration, 2013). Among high school seniors in the United States, 25% used an illicit drug during the past month (Johnston et al., 2014).

Substance use is particularly common among individuals involved in the criminal justice system. Among prison inmates in the United States, 73% used drugs regularly prior to their incarceration and 50% were under the influence of alcohol or drugs when they committed their latest offense (Karberg & James, 2005). From 1975 to 2000, there was a 400% increase in the US incarceration rate and this was due primarily to a rapid growth in the incarceration of drug offenders (Blumstein & Beck, 2005).

Large sums of money are spent by local, state, and federal governments on law enforcement, corrections, interdiction, prevention, and treatment associated with drug abuse (Kilmer et al., 2014; National Drug Intelligence Center, 2011). It is estimated that substance abuse disorders cost \$193 billion per year in lost productivity, healthcare costs, and criminal justice costs. In addition, about \$100 billion per year are spent by individuals to purchase illicit drugs (Kilmer et al., 2014). About 10.5 million people reported driving under the influence of an illicit drug during the past year and one in three drivers killed in motor vehicle accidents tested positive for at least one medication or illicit drug (Office of National Drug Control Policy, 2010).

Given the costs of drug abuse to individuals, communities, and governments, it is important to understand better why individuals consume drugs. The purpose of this chapter is to answer this question by reviewing and evaluating social theories of drug use and abuse.

Scholars and practitioners have developed many theories to understand and explain drug use and abuse. A number of detailed descriptions and evaluations of those theories are available (Abadinsky, 2014; Hanson, Venturelli, & Fleckenstein, 2009; Scheier, 2010). Most discussions of the theories focus on why people take various drugs and do not differentiate initial use from continuation. However, reasons why people begin using drugs may be different from reasons they continue using drugs. In addition, treatment focuses on how people change – how they are able to desist from using drugs after having been a regular user. The process of desistance may differ from the process of initiation. Therefore, as we review the various theories, we will discuss desistance processes along with explanations of why people begin using drugs.

A theory is an attempt to predict something, explain why it occurred, or describe its causes (Agnew, 2005). It is a set of two or more interrelated propositions or statements that explain or predict the existence of a phenomenon (Gibbs, 1972). Most theories begin with a “why” question. In this chapter the question is: Why do individuals take drugs, especially when they know use may harm them physically, damage their interpersonal relationships, or interfere with their work performance?

The remainder of this chapter is divided into five sections. First, we define addiction. The second section is a summary of reasons individuals give for using drugs. In the third section we review criteria for evaluating theories. Fourth, we summarize and evaluate 11 social theories that have been used to explain drug use and abuse. The fifth and final section is a conclusion.

Addiction

Drug addiction may be defined as a strong craving to take a substance that results in a loss of control; there is continued use even in the face of harm to oneself and others. According to Koob and Simon (2009), addiction is a disorder with three recurring stages, (1) preoccupation/anticipation, (2) binge intoxication, and (3) withdrawal.

The American Psychiatric Association (2013) defines a substance-related and addictive disorder as a pattern of use leading to significant impairment or distress. They identified 11 different symptoms of substance-related and addiction disorders. If a person manifests at least two of these symptoms within a 12-month period, they are defined as having a substance-related and addictive disorder. They classify the disorder as mild if there are 2–3 symptoms, moderate if there are 4–5 symptoms, and severe if there are 6 or more symptoms.

The 11 symptoms are (1) taking larger amounts of a substance than intended or using a substance over a longer period of time than intended, (2) unsuccessful efforts to control use, (3) spending much time obtaining a substance, using a substance, or getting over the effects of a substance, (4) having a craving or a strong desire to use the substance, (5) use which results in failure to meet obligations at work, school, or home, (6) continued use despite having problems caused or exacerbated by use, (7) reducing or giving up social, occupational, or recreational activities because of use, (8) recurrent use when it is physically hazardous, (9) continued use despite awareness of problems caused by use, (10) development of tolerance, and (11) development of withdrawal symptoms (American Psychiatric Association, 2013).

Why People Use Drugs

People give many reasons for using drugs and we have grouped these into six categories. First, people take drugs to be accepted by their peers. Drug use is a social activity and rarely do individuals begin using on their own. They begin using a drug because they see others using it and are offered it by friends.

Second, people use drugs because it is enjoyable. Drugs give people a “high” in which they may feel more calm, peaceful, or energized. A young woman in jail explained how her drug use has hurt her and those around her. Still, she said, “I enjoy the feeling the drugs give me even though they have wrecked my life.”

Third, individuals often use drugs to relieve stress or block pain. Some addicts began their use of drugs when a doctor prescribed them for pain. They discovered that they enjoyed taking the drugs and began taking them illegally when the doctor would not continue prescribing them. One young woman said she started using drugs to block the pain after being raped. A young man said he started using after his wife left with their child. Another said she used drugs to numb the pain of her family situation.

Fourth, using certain drugs may help improve performance. This could be taking stimulants to stay awake during exam week or taking other drugs to improve performance in an athletic contest. Drug testing is used in most major sports to insure that performance-enhancing drugs have not been used. Individuals caught with prohibited substances in their bodies are banned from competition. An example of this type of drug use is Lance Armstrong’s use of doping to improve his cycling performance (Albergotti & O’Connell, 2013; Macur, 2014).

Fifth, some use a drug to make a statement, be different, or rebel. When a drug is prohibited, taking it may show that one is different and not bound by the rules.

Finally, curiosity induces some people to experiment with drugs. With the attention given to drugs and the many pro- and anti-drug messages available, some people try them just to see what they are like (Terry-McElrath, O'Malley, & Johnston, 2009).

Criteria for Evaluating Theories

Scholars have identified six major criteria for evaluating theories: (1) empirical validity, (2) verifiability, (3) coherence, (4) simplicity, (5) scope, and (6) utility (Akers & Sellers, 2013; Gibbs, 1972; Hoffmann, 2011). The most important criterion for evaluating a theory is whether or not its predictions are accurate. Second, there must be a systematic way to evaluate whether or not the theory's predictions are accurate. The third criterion is whether or not the theory is logical. Do the propositions make a coherent whole that is logically connected? The fourth criterion is simplicity. If two theories are equally accurate but one includes five propositions while the other includes 20 propositions, we would favor the one with only five propositions. Fifth, scope refers to how narrow or broad a theory is in its explanations. A theory that only explains marijuana use would be narrower than a theory that explains all types of drug use. Finally, theories that provide useful insights for treatment and policy are preferred over theories that do not. The overall goal of the theories discussed in this chapter is to explain why individuals use and abuse drugs and how they may change and overcome addiction.

Often the theories are categorized into three major types: social, psychological, and biological (Abadinsky, 2014; Akers & Sellers, 2013; Petraitis, Flay, & Miller, 1995). Although this categorization is useful, some integrated theories include social, psychological, and biological elements. We now turn to a selective review of 11 major theories of drug use and abuse.

Social Theories

Social learning theory

Social learning theorists posit that motivations to use drugs are learned through associations with significant others in small, informal groups such as peer groups and families. It is in these intimate settings that individuals acquire attitudes regarding drugs and their use and observe the behavior of others. The causal learning mechanisms are modeling, direct teaching, reinforcement, and punishments (Akers, Krohn, Lanza-Kaduce, & Radosevich, 1979; Akers & Sellers, 2013).

Modeling is observing what others do and copying them. Often people begin taking drugs after seeing others take them.

Direct teaching is explicitly setting standards and explaining how to behave. Parents often teach their children explicitly not to take drugs. Most people are exposed to different types of models and teaching. At home, adolescents may be taught not to drink but then they may be taught by friends that drinking is “cool” and enjoyable.

Learning also occurs through reinforcement and punishment. If individuals associate with others who use drugs, they will be exposed to attitudes favorable toward drug use, will see others using drugs, will be offered drugs, and are likely to receive positive reinforcement for drug use and negative sanctions if they refuse to use drugs.

Empirical data tend to support the validity of social learning theory as an explanation of drug use and abuse. One of the most consistent findings in the literature is that peers have a strong influence on the onset and persistence of drug-use behavior (Akers & Sellers, 2013; Elliott & Menard, 1996; Hoffmann, 2011). Akers et al. (1979) found that differential association, differential reinforcement, definitions, and imitation explain a substantial amount of the variance in alcohol and marijuana use. However, Rebellon (2012) reported that drug use also influences the type of peers one chooses – substance users tend to seek out friends who also use substances.

An important issue in the study of drug abuse is how people change. Social learning theory suggests that to desist from drug use, people should change their associates. Avoiding old influences or “selective involvement” is a common risk reduction strategy for avoiding drug use and crime (Abrams, 2006; Bottoms, Shapland, Costello, Holmes, & Muir, 2004; Shapland & Bottoms, 2011). If individuals “hang out” with people who use drugs and are in situations where alcohol and drugs are used, it will be difficult for them to abstain from drug use. Individuals who desire to stop using drugs frequently state that it is critical for them to avoid drug-using friends they associated with earlier (Bahr, Harris, Fisher, & Armstrong, 2010).

Self-efficacy is an important concept in Bandura’s (1977, 1982) social learning theory and it appears to be useful in understanding drug use. He defined self-efficacy as perceptions of how well one can execute courses of action. He maintained that self-efficacy is a key ingredient of behavioral change and discussed how self-efficacy may be influenced by accomplishments, experience, verbal persuasion, and emotional arousal. Individuals low on self-efficacy will put little effort into staying away from drugs because they doubt that they can succeed.

Social control theory

Social control theory is based on the premise that deviance is normal and conformity, rather than deviation, must be explained. Given the pervasiveness of alcohol and drug use in society, most adolescents and adults are exposed to drugs and may be inclined to use if there are no social controls provided through families, peers, and religious organizations. As individuals associate with others who do not use drugs, they are likely to develop bonds which constrain them from drug use. For

example, if one is attached to family members who do not use drugs, the prospects of damaging or severing those relationships by using drugs will help decrease the likelihood of drug use and abuse.

Consistent with social control theory, entering a marriage tends to decrease use while separation and divorce tend to be followed by an increase in drug use (Laub, Nagin, & Sampson, 1998; Sampson, Laub, & Wimer, 2006). The bonds to and informal monitoring by a spouse appear to help individuals desist from drug use. Laub et al. (1998) found that it was not just marriage but a cohesive marriage that had a preventative effect.

Individuals who are able to refrain from drug use tend to have support from family members – parents, children, or a partner (Bahr et al., 2010; Davis, Bahr, & Ward, 2013). The lack of satisfying relationships leaves individuals more susceptible to the influence of deviant peers (Bahr et al., 2010; Morizot & Le Blanc, 2007). Marriage and children may create bonds that increase the costs of law violations and increase the motivation to avoid drug use (Bahr & Hoffmann, 2010).

When individuals obtain a desirable job, they develop a stake in conformity – they have something to lose if their behavior jeopardizes their employment (Laub & Sampson, 2003). In addition, work may provide an opportunity to create new networks which replace old deviant networks. The type of work one has may be more important than just being employed (Agnew, 2005; Shover, 1996). For example, low-paying or distasteful work may do little to help individuals stay away from drugs while enjoyable, well-paying jobs are likely to aid in desisting from drug abuse.

Parenting is another important variable that may influence the development of bonds. When parents are supportive, adolescents tend to develop bonds with their parents, which may help constrain them when faced with peer pressure to drink or use other drugs. The child's response to rules and monitoring is likely to be more compliant if a bond between the parent and child exists (Bahr et al., 2010; Bahr & Hoffmann, 2010).

Religious involvement is another way in which social control may be developed. There are four different ways in which religious involvement may influence drug use and abuse. First, through religious involvement individuals may develop interpersonal attachments that attenuate inherent tendencies toward drinking and drug use (Hoffmann & Bahr, 2005). Second, many religious organizations teach principles that include avoiding drug use (Desmond, Soper, Purpura, & Smith, 2009). Third, being involved in a religion encourages social conformity, such as following the dictates of authority figures and parents (Burkett, 1993). Fourth, through religious involvement individuals may develop networks of friends who do not use drugs (Adamczyk & Palmer, 2008).

Research has confirmed that religiosity is associated with less drug use. For example, those who attend church frequently are less likely to develop or maintain an alcohol use disorder (Borders & Booth, 2013). Religiosity also appears to act as a buffer or moderator on the influence of social norms on drinking. Thus, when norms favor alcohol use, those norms will have less impact on the drinking behavior of individuals who have high religiousness (Neighbors, Brown, Dibello, Rodriguez, & Foster, 2013).

Self-control is a key construct in social control theory. Individuals with high self-control are less likely than others to abuse drugs and if they do, they are more likely than people with low self-control to benefit from treatment and desist from drug abuse (DeLisi & Vaughn, 2008; Rebellon, Straus, & Medeiros, 2008). Competent parenting is one of the key mechanisms in the development of self-control (Gottfredson & Hirschi, 1990).

Strain theory

According to strain theory, drug use is a response to various types of stress. Agnew (2006) postulated that strains tend to result in negative emotional states such as anger, frustration, jealousy, depression, and fear. These emotions lead to pressure for corrective action, reduce ability to cope in a legal manner, and reduce concern with the costs of drug use. Furthermore, strain may reduce social control and foster the social learning of crime (Agnew, 2005).

When individuals describe how they initially began abusing drugs, many describe a stressful situation in which they turned to drugs for relief (Davis et al., 2013). One young woman said she started taking drugs to dull the pain after she was raped. Another was angered after being beaten up by a group of girls while attending a party. The next night she went to get revenge and during the ensuing scuffle she stabbed a girl. A young man said he started committing crimes after his marriage broke up – his wife left and took their son with her.

There are three common types of strain identified by Agnew (2005, 2006). First, there is goal blockage – the inability to achieve a desired goal. An example of this type of strain is school failure. Agnew has focused on strain at the individual level, while other strain theorists have focused on strain among different groups or classes of people (Merton, 1938, 1957). For example, living in an economically deprived community may block or restrict opportunities to attend college (Akers & Sellers, 2013). Second, one may lose something of value – such as the breakup of a relationship or the loss of a child. Third, one may receive a negative stimulus such as being bullied at school, losing a job, or being raped.

Strain can be reduced by increasing coping and problem-solving skills, providing support from family and friends, or by replacing what was lost. Improved coping and problem-solving skills will enable people to react to strains in more productive ways. The loss of a relationship may be less stressful if one has support from family and friends. The strain of not having a job could be relieved by obtaining another job.

Cognitive transformation theory

The cognitive transformation theory of Giordano, Cernkovich, and Rudolph (2002) is a social psychological theory developed to understand better the process of desistance. It is different from many of the other theories used to understand drug use

and abuse in that it focuses on the process of change – how people learn to desist from drug use and crime.

The theory proposes that there are four key elements in the desistance process. First, they hypothesized that individuals develop an openness to change in which they begin to conceive of personal change as a possibility.

Second, individuals are exposed to particular circumstances or “hooks” that may help them move toward change. Hooks include social changes such as obtaining a good job, attending a treatment program, or getting married (Giordano et al., 2002; Laub & Sampson, 2003; LeBel, Burnett, Maruna, & Bushway, 2008; Maruna & LeBel, 2010).

The third element in their desistance theory is the development of a conventional replacement self. Drug abusers begin to see themselves in a different light and attempt to change their identity.

Finally, there is a reinterpretation of previous illegal behavior. Those previously involved in drug abuse begin to view it as something that hurts others and that they want to avoid.

Consistent with cognitive transformation theory, Terry (2003) described desistance as a conversion process that often begins when an event helps individuals reassess their lives. Maruna (2001) argued that desistance requires a reformulation of one’s identity in which they differentiate themselves from their previous mistakes. Similarly, Shover (1996) and Rungay (2004) found that those who desisted were able to conceive of change as possible and alter their perceptions of their previous activities.

Life course theory

Life course theory integrates social learning, social control, and cognitive transformation theories (Akers & Sellers, 2013; Farrington, 2003; Laub & Sampson, 2003). Associations provide models of and reinforcements toward or away from certain behaviors. Bonds to work, family, and friends help constrain behavior. Choice is an important element in this process as individuals decide who they associate with, where they will live, and what job they will take. Key concepts in the life course perspective are turning points and change over time.

Desistance is conceived as a process which depends on both social and subjective influences. Social influences include employment, marriage, parenthood, friends, and treatment. Subjective factors are internal motivation, attitudes, self-esteem, and identity. Change is most likely when drug abusers have the desire to change, view change as possible, and have social support for change (LeBel et al., 2008).

The motivation to change will have little impact unless the social influences of drug abusers support their desistance (Byrne & Trew, 2008; Laub & Sampson, 2001). However, social supports will have minimal impact if individuals do not have the motivation to change.

Social development model

The social development model (SDM) is a life course theory that integrates concepts from social control and social learning theories into a developmental framework (Hawkins & Weiss, 1985). Catalano and Hawkins (1996) identified five key concepts in their theory. First, provide opportunities for prosocial involvement. Second, teach skills needed to take advantage of opportunities. Without skills to succeed, individuals will not be able to take advantage of opportunities. Third, provide rewards for prosocial involvement. Reinforcement for positive behavior will improve skills and lead to further prosocial behavior. The fourth concept is bonding, which occurs as individuals are recognized and rewarded for their behavior. Fifth, set clear expectations about behavior and the social order.

The authors conceptualize a prosocial and antisocial path. Thus, individuals will have perceived opportunities for antisocial behavior and perceived rewards for antisocial behavior. Those will influence attachment to antisocial others and beliefs in antisocial values. Of course, individual characteristics and external constraints also impact opportunities, rewards, and skills (Catalano & Hawkins, 1996).

In a longitudinal test of the social development model, characteristics measured at ages 9–10 and 13–14 were able to predict drug use at ages 17–18 (Catalano, Kosterman, Hawkins, Newcomb, & Abbott, 1996). More recent findings are also consistent with the social development model (Hawkins, Kosterman, Catalano, Hill, & Abbott, 2008; Huang, Kosterman, Catalano, Hawkins, & Abbott, 2001).

Rational choice theories

Rational choice theories find their roots in the eighteenth-century writings of the Italian philosopher Cesare Beccaria, the Scottish moral philosopher Adam Smith, and the English philosopher and jurist Jeremy Bentham. They proposed that criminal and similar behaviors are the result of self-interest that is based mainly on a rational calculation of the costs and benefits of any behavior. Effective laws designed to prevent criminal behavior should raise the costs of such behavior and minimize the pleasures derived from it. This is similar to deterrence theory's tenets that we may prevent crime and drug use by increasing the certainty and severity of the punishment for these behaviors. Moreover, rational choice theory provides the basic assumptions for the field of economics. The key argument is that most people are rational most of the time, so any regular sets of behaviors – including drug use – may be viewed as those that provide some degree of pleasure and do not introduce overly weighty costs to the individual. Considering how costs and benefits are calculated should thus underlie most explanations of human behaviors.

For example, the economist Gary Becker proposes that even drug addiction may be explained by rational choice theory. In their theory of rational addiction, Becker and Murphy (1988) propose that addicts understand how the drugs affect them based on their past experiences and are willing to minimize their perceptions of

future risks for present rewards. Others have argued that drug use occurs when individuals derive pleasure from the behavior, which could include the intoxicating effects or the camaraderie of using with friends, and foresee relatively few consequences, such as a low risk of getting caught by parents or law enforcement. However, a recent study also showed that heavy use of drugs or alcohol can change one's perception of risk by reducing the perception of getting caught (Apel, 2013). Hence, intoxication can directly affect the cost–benefit calculation that is at the heart of rational choice theory.

Moreover, some of the research discussed earlier has been interpreted through the lens of rational choice theory. For instance, Duncan and colleagues (Duncan, Wilkerson, & England, 2006) found that marriage is associated with less binge drinking and marijuana use because it raises the costs of these behaviors: the displeasure of one's spouse, a heightened risk of getting caught, and so forth. Thus, desistance from drug use may be based on new social factors that raise the costs or reduce the benefits of drug use.

Community-level theories

The theories of drug use discussed so far have focused on individual and small-group influences. However, there are several theories that address community- or neighborhood-level influences, including (a) epidemic models, (b) collective socialization, (c) an institutional model, and (d) relative deprivation (Jencks & Mayer, 1990). These are rooted in the theories discussed earlier, but examine how the larger community may lead to various forms of social learning, weak bonds, and greater strain (Boardman, Finch, Ellison, Williams, & Jackson, 2001).

An epidemic model of drug use suggests that community residents, especially children and teens, are socialized partly by the role models they are exposed to in their communities. If children are raised in communities where many other residents use drugs then they will likely adopt these types of behaviors. On the other hand, if children grow up in communities with residents who stay away from drugs, they will likely adopt conventional behaviors and avoid drug use. Some researchers have termed this a contagion or diffusion model because, much like people are susceptible to catching the flu when exposed to someone who is ill, children may “catch drug use” if exposed to drug users (Eitle & Eitle, 2004; Ferrence, 2001). An epidemic or contagion model is a community-level version of social learning theory.

Another theory that is based on social learning principles is collective socialization. Affluent adults are thought to provide role models of conventional behavior and be less likely to tolerate misbehavior, even among children who are not their own. They are also more likely to intervene when a child is misbehaving. They usually work at steady jobs and don't engage in illegal or deviant activities such as illegal drug use, at least not visibly. Hence, affluent adults provide positive role models for youth. As the concentration of affluent adults in a community increases, the risk of illegal drug use and abuse decreases and rates of these

problems are lower. In contrast, if there are few affluent adults to provide conventional role models, such as in areas with a high number of adults without jobs (Hoffmann, 2002), the risk of being exposed to unconventional adults – or those who are unwilling to intervene when observing misbehavior – increases. This may lead to a higher general risk of illegal drug use in the community.

The third theory focuses on adults from outside the community, including teachers, recreation and community center staff members, and police officers. It is commonly known as an institutional model because it addresses adults who work for the primary institutions in the community. Although some of these adults may live in the community, many commute to work. If better teachers tend to avoid working in disorganized communities, then children may get an inferior education and become involved in drug use and delinquency. If community workers and police officers treat adolescents in disorganized areas poorly or differentially arrest them for law violations, then this will affect their life chances and expose them to the juvenile justice system, which may further their involvement in drug use and abuse.

A final theory assumes that exposure to affluent adults does not decrease drug use; rather, it may lead to a higher likelihood of drug use for some who reside in disorganized communities. Based on social psychological principles about how people compare themselves to others, relative deprivation theory argues that when affluent neighbors reside in the same community as impoverished residents, a heightened sense of unfairness and strain results. As poor adolescents see people in their community who have money or valuable things, they also want them but do not have the same access to them through legitimate means. Moreover, a sense of frustration may build when experiencing poverty amid affluence. Some poor adolescents might work harder to achieve the education or occupational goals that will allow them gain valuable material items. Others may simply give up. But, according to this model, a substantial number of youths channel their sense of unfairness and frustration toward drug use, perhaps because it is a form of rebellion or because it helps them cope with the frustration they experience due to a social comparison process (Hoffmann, 2002). There have been several studies of the effects of relative deprivation on delinquency. One study found that those who see themselves as having relatively few economic means are more likely to be involved in delinquency and drug use (Stiles, Liu, & Kaplan, 2000).

Personality theories

The essence of personality theory is that there are certain personality types that are more prone to drug use and abuse. Many different personality characteristics have been proposed as predictors of substance abuse and crime. Some of the more commonly proposed traits are low self-control, impulsivity, risk seeking, irritability, and low empathy (Farrington & Welsh, 2007; Miller & Lynam, 2001; Petraitis et al., 1995; Webb, Sniehotta, & Michie, 2010).

The basic question in personality theory is: Are some people more crime prone because of personality characteristics? Caspi et al. (1994) found that both negative emotionality and weak constraints are associated with delinquency.

Miller and Lynam (2001) conducted a meta-analysis of 59 studies of personality and antisocial behavior. They found that the different personality types could be integrated into two broad personality types, agreeableness and conscientiousness. Individuals low in agreeableness tended to be hostile, self-centered, spiteful, and indifferent to others. Those low in conscientiousness tended to lack motivation, ambition, and perseverance and have difficulty controlling their impulses.

The “negative emotionality” and “weak constraint” identified by Caspi et al. (1994) are similar to the concepts of “agreeableness” and “conscientiousness” discussed by Miller and Lynam (2001). In addition, “weak constraint” is similar to “low self-control” which is a key concept in Gottfredson and Hirschi’s (1990) General Theory of Crime. Furthermore, in Agnew’s (2006) strain theory, “negative emotions” is a mediating variable between strain and illegal behavior, including drug abuse. However, Agnew views negative emotion as a more transitory response to strain while personality theorists conceive of “negative emotionality” as a trait that is a relatively stable part of one’s personality.

Although there has been much theorizing about the association between personality traits and drug abuse, there has been less attention given to the origins of the personality traits. Two explanations have been proposed. First, the family environment, particularly parenting practices, has been hypothesized to influence the personality traits. This is similar to Gottfredson and Hirschi’s (1990) contention that parenting is a major causal influence on self-control. Second, many assume that there are neurobiological causes of negative emotionality and low constraint (Caspi et al., 1994). Recent research indicates that both genetic factors and social support have significant effects on the development of self-control (Beaver, Boutwell, & Barnes, 2014).

Another commonly proposed personality characteristic associated with drug abuse and crime is psychopathy. Some of the indicators of psychopathy include being calloused, remorseless, guiltless, short-tempered, and not having the ability to empathize (Beaver, Rowland, Schwartz, & Nedelec, 2011). The evidence indicates that psychopathy is associated significantly with criminal behavior including drug use and abuse (Beaver, Barnes, May, & Schwartz, 2011).

The use of personality theories to explain drug use and abuse has several limitations. First, much of the research has a problem of tautology – some measures of personality traits are also used as indicators of illegal behavior and drug use. Second, the findings have not been consistent in showing associations of personality types and drug abuse and the strength of the associations has been relatively small (Akers & Sellers, 2013). Third, there have been few studies in which personality traits are used prospectively to predict crime and drug use (Caspi et al., 1994).

Cognitive-behavioral theory

Cognitive-behavioral theory (CBT) assumes that drug abuse is the result of maladaptive thinking patterns. Often individuals initiate or continue drug use because of thinking errors such as blaming others for their problems or making excuses for their behavior. According to CBT, the solution to drug abuse is to help people recognize and correct their thinking errors and understand how their behavior is not meeting their needs. A number of overviews of CBT and treatment programs are available (Cullen & Jonson, 2011; Lipsey & Landenberger, 2006; Milkman & Wanberg, 2007).

Cognitive-behavioral treatment programs focus on restructuring ways of thinking and on helping individuals develop interpersonal skills. They are designed to help patients recognize and react to cravings for drug use on the thought and behavioral levels (Lowenkamp, Hubbard, Makarios, & Latessa, 2009; Milkman & Wanberg, 2007).

It has been reported consistently that individuals who receive cognitive-behavioral treatment programs tend to be less likely to use and abuse drugs than comparison subjects (Budney, Moore, Rocha, & Higgins, 2006; Carroll et al., 2006; Easton et al., 2007; Hall, Prendergast, Wellisch, Patten, & Cao, 2004; Kadden, Litt, Kebela-Cormier, & Petry, 2007; Pelissier et al., 2001; Rawson et al., 2006). In addition, two recent meta-analyses confirmed that cognitive-behavioral therapy is an effective treatment for substance abuse disorders (Dutra et al., 2008; Magill & Ray, 2009).

Biosocial theories

One of the major trends in the study of drug use and abuse is the emergence of biosocial theories (Plomin & Asbury, 2005; Walby & Carrier, 2010; Wright & Biosvert, 2009; Wright & Cullen, 2012). Since Chapter 11 in this volume provides a detailed review of physiological theories, we do not review them here. However, we mention briefly the biosocial perspective and how social and physiological elements interact in explaining drug use and abuse.

According to the biosocial perspective, drug addiction is a chronic brain disease and needs to be treated as other chronic diseases such as hypertension and diabetes. Although the initial consumption of drugs may be voluntary, once individuals become addicted they no longer have control over their drug-taking behavior. In recent years researchers have begun to explore the neurobiological mechanisms involved in substance abuse disorders (Koob & Simon, 2009). The focus is on how drug use and abuse change the structure and functioning of the brain and how this impacts behavior (Burt & Simons, 2014; Leshner, 1997; Powlledge, 1999).

The biosocial perspective emphasizes how physiological variables interact with social variables to influence substance abuse disorders. For example, Beaver et al. (2014) demonstrated how self-control is influenced by both genetic factors and

social support. Furthermore, there is evidence that social factors tend to be mediating variables. To illustrate, Vaughn, Beaver, and DeLisi (2009) found that genetic factors influence delinquent peers, neurocognitive skills, and maternal withdrawal; and they, in turn, influence self-control, which impacts drug and alcohol use. Since the influence of the genetic factors operates through social variables, the impact of the genetic factors could be lessened by the social variables (maternal behavior and the type of peers with whom one associates).

Recent work demonstrates that much previous work was overly simplistic and did not adequately recognize the interplay between biology and the environment nor the plasticity of the brain. There is evidence that physiological factors may be influenced by social characteristics. For example, Beaver, Vaughn, DeLisi, and Higgins (2010) reported that maternal involvement and household income influenced neuropsychological functioning. Furthermore, CBT has been linked to changes in thinking process and the neurology of the brain (Burt & Simons, 2014). Vaske, Galyean, & Cullen (2011) found that social skills, coping skills, and problem-solving skills taught in cognitive-behavioral therapy were associated with increased neurological activity in the brain.

Conclusion

These theories do not exhaust the perspectives that have been employed to explain drug use and abuse. Theories of self-esteem/self-derogation, moral development, conflict, labeling, and various combinations of these perspectives have also been used to describe the etiology of drug use and abuse (Akers & Sellers, 2013; Cullen & Agnew, 2010; Lowenkamp et al., 2009; Petraitis et al., 1995; Webb et al., 2010). However, these 11 theoretical perspectives are frequently used to explain the initiation, continuation, and desistance of drug use. All have been subject to critical evaluation and have been used to help formulate prevention and treatment programs.

One of the major shifts in the study of drug use and abuse is increased emphasis on prevention and treatment. National surveys such as Monitoring the Future and the National Household Survey of Drug Use and Health were established to provide information that is useful in targeting prevention efforts. The National Institute on Drug Abuse (NIDA) has supported the implementation and evaluation of drug prevention programs (Sloboda, Cottler, Hawkins, & Pentz, 2009). Chapters 25 and 26 in this volume address the prevention and treatment of drug abuse.

Drug use and abuse are associated with much criminal activity. The large increase in the incarceration rate in the United States was due largely to the “War on Drugs” and efforts to deal with substance abuse. Chapters 14, 18, and 19 in this volume deal with the association of drug use and crime. Chapter 21 addresses the issue of drug use and criminalization, while Chapter 24 examines drug use from a law enforcement perspective.

Given the pervasiveness of drug use and abuse, an examination of desistance from drug use seems particularly important. Several of the theories provide insights

regarding the desistance process. Whatever the catalyst for this desire – be it jail time, friends, family, or hitting rock bottom – it appears that the desire to change is a requisite step in desistance from drug abuse. However, the theories also predict that social support in various ways is critical for desistance.

Support will have more impact among those who desire to change. And those who receive support are more likely to perceive that change is possible and to have a desire to change.

However, those with a strong motivation to change may fail if they don't have a good support system. Individuals who decide to desist from drug use often lose their resolve at critical turning points when they become discouraged or are faced with temptations from friends. At these critical situations, support networks may be particularly important in reinforcing their desire to change. Similarly, those with strong support from family or others may not succeed if they lack a desire to change (LeBel et al., 2008). Thus, the theories suggest that the two concepts interact. First, motivation has a positive association with desistance but this association will become stronger as social support increases. Second, social support has a positive association with desistance and this association will increase as motivation increases. Both motivation and self-control will be influenced by physiological factors, as suggested earlier. In addition, the theories indicate that social support may have a positive influence on motivation. Finally, family, friends, employment, and treatment may all be viewed as different types or indicators of support.

In this chapter we have identified common reasons for using drugs. When people give those reasons, most are using one of the theoretical perspectives implicitly, even though they may know nothing about the theory. Thus, all who give personal explanations for why people use and abuse drugs are presenting their own individual theory, however informal or incomplete it may be.

Those who have developed the theories have systematically organized, tested, and refined the informal reasons into explanations. The theories help us understand better why people initially take drugs, why they continue use, why they abuse drugs, and how they can desist from drug abuse. In addition, the theories provide insights that are useful in helping design policies and programs to prevent and treat drug abuse.

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The Intersection between Neurobiological and Psychological Theories of Substance Use Disorders

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Why do people engage in substance use? This may seem like an easy question. Most people can think of reasons for having a drink at the end of a long day, waking up with some coffee, or taking a painkiller for a pulled muscle. A more difficult question, though, is why some people *abuse* substances. Substance use disorders (SUD) rank among the most widespread and costly illnesses nationwide. In 2011, 6.5% of the population was dependent on alcohol or had problems related to alcohol use, and more than 2.5% of the population met clinical criteria for dependence or abuse of an illicit substance. This particular problem also accrues over \$600 billion per year in costs related to crime, diminished work productivity, and healthcare (National Institute of Drug Abuse 2012). Although there are certainly many factors that contribute to the transition from simply using a substance to a chronic, recurrent pattern of use that leads to impairment in various life domains, core neurobiological and psychological processes are continually implicated in the development and maintenance of SUD.

Most consistently, SUD are characterized by marked dysfunction in reward-seeking behavior (American Psychiatric Association 2013). A defining feature of SUD is the excessive pursuit and use of a substance that is disproportionate to the hedonic (i.e., pleasurable) impact derived from it. However, basic human and animal neuroscience literature indicates that reward is not a unitary construct, but instead multifaceted. Reward is believed to be comprised of three primary components with distinct neural circuitry: “liking,” which refers to the hedonic impact of reward consumption; “wanting” or incentive salience, which refers to the motivation to pursue a reward; and learning, or the acquisition of reward-outcome contingencies (Berridge, Robinson, and Aldridge 2009). Importantly, this line of research demonstrates that these components of reward may vary across individuals and drive the transition from use to SUD within an individual.

Given that reward-related abnormalities are omnipresent in SUD, it is important to understand the impact abnormalities in reward processing have on these clinical phenomena. The goal of this chapter is to summarize and synthesize the findings in reward processing and SUD. First, we provide a brief overview of the basic neuroscience literature on reward. Next, we review the specific neural abnormalities that have been identified, to date, within SUD. Finally, we integrate the basic neurobiological patterns with important psychological theories, specifically self-medication and distress tolerance. An integrative focus on abnormal neurobiological and psychological functioning may help to clarify the nature of deficits across SUD and better predict the onset of and recovery from these issues.

The Neurobiology of Reward

Not only has significant progress been made in parsing the psychological components of reward, but also in identifying the underlying neural mechanisms associated with each component. Broadly speaking, reward processes are represented in the brain by a complex network involving many subcortical structures such as the nucleus accumbens, ventral tegmentum, ventral pallidum, amygdala, and mesolimbic dopamine projections, as well as cortical structures, including the orbitofrontal cortex (OFC), anterior cingulate (ACC), and insula. Evidence from animal studies (i.e., pre-clinical) and human studies suggests that interactive components in this circuitry link processes involved in reward-related functioning, such as cognition, emotion, and goal-directed behavior (Everitt et al. 2008; Haber and Knutson 2010).

Though there is inherent complexity in the interrelationships of specific brain regions within this reward circuitry, certain structures have been principally associated with distinct reward processes of “liking,” “wanting,” and learning, respectively (Berridge, Robinson, and Aldridge 2009). It is important to note that “liking” and “wanting” are not the same as subjective liking and wanting. The former represent heuristics that can be useful in guiding theories about the distinct effects of discrete neurobiological systems on behavior. Therefore, activation of “liking” and “wanting” can be associated with subjective feelings of liking (e.g., enjoyment) or wanting (e.g., desire), but these reward-related processes may also occur implicitly without the associated subjectivity (Berridge 2006). Simply put, an individual with a SUD may report that s/he subjectively no longer likes using a substance or experiences a desire for it; however, the underlying neural processes linked to “liking” and “wanting” may still be at play and contribute to maintenance of his/her disorder.

“Liking”: The hedonic impact of rewards

The process of “liking” is a basic evolutionary function that represents the hedonic impact of information. Though liking is commonly linked to subjective pleasure, “liking” is a process that represents an implicit or objective reaction to hedonic

stimuli that is not dependent on a conscious feeling of pleasure. “Liking” reactions can be elicited by a variety of conditioned and unconditioned stimuli ranging from tastes (e.g., sweet) to drug-mediated rewards, money, and sex (Beaver et al. 2006).

Much of the initial research used to identify and define “liking” comes from conditioning studies with animals. Using objective measures, such as facial reactions to conditioned sweet tastes, Berridge and colleagues identified a number of hedonic hotspots in the ventral pallidum and the shell of the nucleus accumbens that mediate pleasure. Opioid, endocannabinoid, and GABA-benzodiazepine neurotransmitter systems are important for enhancing the hedonic perception of rewards, particularly at specific sites in limbic hedonic hotspots (Berridge and Robinson 2003). Activation of these hotspots closely relates to increases in “liking” reactions, such as affective reactions in rats elicited by oral infusions of sucrose, whereas damage to these regions corresponds to a “disliking” reaction (e.g., gaping, pre-vomiting reaction to bitter *and* sweet tastes; Peciña 2008). In humans, the core neural components of “liking,” or the experience of pleasure, include the ventral pallidum and the ventral striatum, specifically the shell regions of the nucleus accumbens (NAc). The ventral pallidum is a primary target for NAc outputs. In particular, the activation of mu-opioid and endogenous cannabinoid receptors in the NAc and ventral pallidum enhances the hedonic perception of rewards. Other components, including GABA-receptor feedback and mesolimbic outputs to certain locations in the NAc shell and the ventral pallidum, also modulate “liking” (Berridge and Robinson 2003).

While dopamine traditionally has been linked to sensory pleasure, research indicates that this neurotransmitter is not adequate for initiating a “liking” response (Berridge and Robinson 1998). For example, activation of dopamine in the NAc through amphetamine microinjection does not change the “liking” response, but does increase the motivational component of a reward (Wyvell and Berridge 2000). As such, the primary role of dopamine has been linked to incentive salience, learning, and other reward-related functions (Berridge 2006).

“Wanting”: The motivation salience of rewards

Although “liking” and “wanting” may seem tightly coupled, these processes are neurobiologically and psychologically separable. “Wanting” refers specifically to incentive salience that motivates approach toward rewards rather than simply activation of the aforementioned neural mechanisms associated with a “liking” response. It is often mediated by the reward stimulus itself, and does not require elaborate cognitive expectations. As such, “wanting” is distinct from subjective wanting, which relates more to explicit and elaborative expectations and goals. “Wanting” can occur in the face of innate incentives (e.g., unconditioned stimuli) or learned stimuli (e.g., conditioned stimuli). Research on the neural systems responsible for “wanting” uses a variety of rewards ranging from drug administration, to stimuli representing sex and food, to monetary rewards.

Across these reward elicitors, the midbrain dopamine (DA) system appears primarily responsible for mediating the motivation to obtain them (Berridge and Robinson 2003). Specifically, DA projections from the ventral tegmentum to the ventral striatum, largely the NAc core (Di Chiara 2002), fire in response to unpredicted rewards and cues that predict rewards. Additionally, dopamine firing is diminished when predicted rewards do not occur (Schultz 2007). Thus, it is hypothesized that one function of dopamine is to connect incentive salience to the cues that predict reward.

In addition to DA, opioid receptors in the amygdala, specifically the basolateral amygdala, are involved in the evaluation of rewards (Murray 2007). For example, during food deprivation, administration of mu-opioid antagonists (e.g., naloxone) into the basolateral amygdala blunts the seeking response to sucrose without impacting the experience of pleasure for sucrose (Wassum et al. 2009), once again highlighting a distinction between “liking” and “wanting.” In addition, inhibition of glutamatergic projections from the basolateral amygdala to the NAc reduces motivated response for sucrose (Stuber et al. 2011). Together, these findings suggest that along with DA, opioid and glutamatergic activity in the basolateral amygdala is important for motivated behavior.

Learning: The association between previous rewards and predicting future rewards

Though the processes of “wanting” and predicting reward are related, the differential neural structures implicated in these processes indicate that associative value of reward may be separated from its motivational value, depending on the learning processes. At a simplified level, learning involves building knowledge about a specific relationship, understanding the associative causation between stimuli, and elaborating on those associations. Neural substrates for building associations (e.g., assessed during instrumental or Pavlovian conditioning in animals and often through conditioning and gambling tasks in humans) rely more heavily on cortical structures, including OFC, insular cortex, and prefrontal cortex, but also include interactions with subcortical regions.

One function of the OFC is quick associative learning (e.g., stimulus–reinforcement) and the alternation of these associations when the contingencies change (Rolls 2000). For example, primates with lesions to the OFC show impairment in tasks that require learning about which stimuli are rewarding or not and in altering their behavior when the contingencies change in the environment (e.g., object reversal and go/no-go tasks; see Rolls 2000 for review). Additionally, this region plays a role in attaching affective valence to stimuli through its relationship with the amygdala (London et al. 2000) and evaluating stimulus characteristics through connections with regions believed to underlie memory functions (e.g., dorsolateral prefrontal cortex; Perlstein, Elbert, and Stenger 2002).

The insular cortex is believed to play an important role in the anticipation or expectancy of reward (Balleine and Dickinson 2000), whereas the ACC encodes

previous reward outcomes (Kennerley, Behrens, and Wallis 2011). Additionally, the value of reward, and ultimately decision-making based on those values in an effort to promote goal-directed behavior, is processed in the anterior ventromedial prefrontal cortex and dorsolateral prefrontal cortex (Bechara, Tranel, and Damasio 2000). These neural regions that represent different learning processes serve to associate cues with their context, and with particular responses such as “wanting” a reward or engaging in action to consume the reward. Thus, reward-related learning may bridge the stages of hedonic “liking” (pleasure) with motivational learning.

Even though there is some evidence of partially separable neural substrates across these three core reward processes, it is important to note that each of these psychological components of reward are connected and function together as a coordinated network integrating emotional, motivational, and learning processes. The multifaceted nature of the reward circuitry is important for adaptive functioning, and understanding dysfunctions within this circuit can provide a clearer understanding of the neurobiology of SUD.

Reward Dysfunction in Substance Use Disorders

While different types of substance have different pharmacological and pharmacokinetic properties, their habit-forming, or abuse-related, effects involve a common denominator: a dysfunction in reward circuitry. Increasingly, evidence demonstrates that substance abuse “hijacks” the neural circuitry of reward (Berridge and Robinson 2003). Essentially, substances work in the brain by tapping into this network and interfering with the way components normally send, receive, and process information. Accordingly, studies suggest that structural and functional changes *within* this network, as well as impaired communication *between* brain regions in this network, contribute significantly to the pathogenesis of SUD. More specifically, a number of preclinical and clinical studies support the hypothesis that the primary neural substrates of persistent substance use are linked to “wanting” (salience detection) and learning (associative memory), processes affected by mesolimbic dopamine and the prefrontal cortex (Hyman, Malenka, and Nestler 2006; Tiffany 1990). While the various substances impact multiple neural regions and neurotransmitters (e.g., serotonin) (Kranz, Kasper, and Lanzenberger 2010), the mesolimbic DA system is activated by all major substances of abuse and is of central importance to all (Hommer, Bjork, and Gilman 2011).

Dysfunctional “wanting”: Incentive-sensitization theory

In general, it is proposed that individuals with substance abuse have altered saliency values related to reward (e.g., “wanting”) (Volkow et al. 2004b). This enhanced saliency is initiated by the higher intrinsic reward properties of drugs, again largely regulated by mesolimbic DA. Robinson and Berridge’s (1993) incentive-sensitization

theory posits that the repeated use of substances initiates a cycle whereby any stimuli associated with the substance acquires incentive value, and as the stimuli–substance associations increase in frequency the value increases, thus making the substance even more “wanted.” These high reward values lead to a recalibration of reward thresholds, which result in decreased sensitivity to naturally occurring stimuli (e.g., sex and food) (Zijlstra et al. 2009). As a result of hyperactivity in the reward circuit, motivation and memory circuits are also over-activated and decision-making capabilities (via the frontal cortex) are inhibited. Furthermore, long-term exposure to drugs causes permanent changes in the substance–reward circuit, including the ventral tegmental area, basal forebrain (amygdala), dopaminergic connections between the ventral tegmental area and basal forebrain, and OFC (Koob and Le Moal 2001; Volkow, Fowler, and Wang 2004a).

Of note, these brain systems that are affected, or essentially sensitized to the rewarding properties of substances, do not mediate the pleasurable effects (i.e., “liking”) of drugs but, as noted above, instead mediate the psychological processes of “wanting” and associative learning (Berridge 1996). For example, there is preclinical evidence in mice that suggests chronically elevated DA facilitates “wanting” and learning in an incentive motivation task for a sweet reward, but elevated DA did not alter the “liking” reactions to the hedonic impact of those sweet tastes. More specifically, Peciña and colleagues (Peciña et al. 2003) found that hyperdopaminergic DA mice required fewer trials to learn incentive associations and paused less frequently in a runway test, but failed to show higher orofacial “liking” reactions during an affective taste reactivity test.

Converging clinical evidence also highlights the importance of mesolimbic-mediated salience detection, or “wanting,” in the maintenance of SUD. Increases in DA have been reported in amphetamine users, and this increase was associated with subjective reports of the reinforcing properties of the substance (Drevets et al. 2001). Along with these studies, increases in striatal DA induced by stimulant drugs have been associated with the subjective experience of wanting the substance (e.g., self-reported desire for more drug and feelings of being high) (Volkow et al. 2004a). Additionally, positron emission tomography (PET) studies report acute DA metabolic changes during the administration of substances and long-term brain changes in DA activity with continued use. PET studies also consistently demonstrate a reduction in availability of D2 receptors in the striatum, which is inversely associated with DA levels in the midbrain, in subjects with SUD (cocaine, methamphetamine, heroin, and alcohol) compared to controls (Volkow et al. 2004a).

In addition to imaging methods, electrophysiological research in humans emphasizes a specific deficit in salience detection in SUD. Studies have focused on the P300, an event-related potential (ERP) related to dopamine production and the allocation of attentional resources to salient or task-related stimuli (Polich 2007). With relation to SUD, an enhanced P300 to alcohol cues has been found between alcoholics and non-alcoholics, between non-alcoholic relatives of alcoholics and relatives of controls, as well as between non-alcoholic offspring of alcoholic fathers and offspring of controls (Iacono et al. 2008). Similar increases in P300 amplitude

have also been reported in smokers while viewing smoking cues (Warren and McDonough 1999), in methadone-maintained participants when viewing opiate-related pictures (Lubman et al. 2007), and in cocaine users when viewing drug cues (Dunning et al. 2011). Furthermore, there is some evidence that this increased attention toward salience detection and reward processing decreases during withdrawal; as such, reductions in delta electroencephalography rhythms, a signature of reward-processing and salience detection, has been reported in crack-cocaine users during the substance withdrawal period (Alper et al. 1990). In general, an enhanced P300 to substance-related cues may provide an important biological marker of crucial psychological mechanisms relevant to addiction. Specifically, these electrophysiological patterns suggest that during addiction, substance cues capture attentional resources and acquire enhanced motivational salience compared to non-substance-related cues, but that these associations may diminish once the substance–stimulus reward associations are degraded.

The incentive-sensitization theory and the concomitant neural abnormalities (i.e., “wanting”-based neural processes) are central to understanding SUD. It suggests that the repeated administration of a substance increases its reinforcing properties, progressively gains control of the reward and motivational circuitry, and over time commands control of behavior. However, reward-related dysfunction associated with “wanting” does not occur in isolation. In fact, many of the DA findings associated with “wanting” are moderated by functional and structural changes in the frontal cortex. For example, the deficits in striatal DA are associated with lower metabolic activity in the prefrontal cortex (PFC). Thus, in addition to the central role of “wanting”-based circuitry, studies emphasize the importance of cortical, learning-based, brain regions within the reward circuit, such as the PFC.

Dysfunctional learning: Disruption in the brain’s memory and control systems

One of the most consistent findings in individuals with SUD is abnormal activation in the PFC (Goldstein et al. 2007). Several recent structural imaging studies report morphological volume loss in the (pre)frontal lobe in various forms of SUD, such as cocaine, alcohol, and heroin dependence (Goldstein and Volkow 2002; Liu et al. 1998). Functional imaging studies also consistently show increased activation in the amygdala, OFC, and ACC among cocaine and heroin addicts when exposed to drug cues (London et al. 2000; Volkow and Fowler 2000). This dysfunction in areas of prefrontal cortex, along with its connection to limbic-related subcortical areas (e.g., ventral striatum, amygdala), may give rise to multiple deficits common in SUD, from altered learning to behavioral control.

Animal studies demonstrate that rats with lesions to the ACC and PFC display continued responses to cocaine, even when the cocaine-associated cue is no longer present (Weissenborn, Robbins, and Everitt 1997). Relatedly, substance-dependent

humans display a lack of adaptive associative learning between stimulus and outcome, such that dependent individuals show reward-dependent perseverative response patterns even in the absence of a previously presented reward cue (Wilson, Sayette, and Fiez 2004). This failure to update learned associations also may be related to the preponderance of evidence linking SUD to risky decision-making.

Several patterns of altered executive-function-mediated decision-making have been observed in SUD. Specifically, deficits in learning-based reward circuitry are related to impulsive choice and higher delay discounting (of future rewards relative to immediate ones), especially when experimental manipulations use drug stimuli or drug-deprivation (Coffey et al. 2003). Bechara and colleagues (Bechara and Damasio 2002) reported a larger skin conductance response to monetary reward and in anticipation of outcomes that yield a large reward in a subset of substance-dependent individuals. Moreover, substance-dependent individuals display attenuated insula activation, which is associated with increased risk-taking (Paulus et al. 2003).

The combination of hyperactive “wanting” and dysfunctional learning suggests that reward-related cues, such as drug cues, are not only particularly salient, but persist without the proper opposition from prefrontal regions. Since the interaction between “wanting” and learning circuits are bidirectional, the activation of these reward-related processes serves to further strengthen the saliency of and the conditioning to drug cues. That is, SUD may be initiated and maintained through a process by which especially salient stimuli grab hold of attentional resources, become privileged information, and trigger changes in memory and control circuits of the brain.

Integrating neurobiological and psychological theories of substance abuse

There have been impressive advances in our understanding of the neural mechanisms related to both reward and SUD. Such advances particularly enhance our understanding of the underlying implicit factors driving addictive behavior, that is, “liking,” “wanting,” and learning (Berridge et al. 2009); however, it is necessary to integrate such findings with psychological theories of substance use in order to better understand the complex interplay between implicit mechanisms and the somewhat more explicit psychological factors that contribute to and maintain SUD. For example, research indicates that both somatic and emotional distress are important to the development and maintenance of SUD (Cheetham, Allen, Yucel, and Lubman 2010; Kreek and Koob 1998), highlighting the importance of an individual’s subjective experience. As such, the following section will integrate two prominent psychological theories of addiction, self-medication (Khantzian 1985) and distress tolerance (Brown, Lejuez, Kahler, Strong, and Zvolensky 2005; Buckner, Keough, and Schmidt 2007) with the current understanding of underlying reward processes to aid in a more complete understanding of substance use.

Self-medication

One of the most widely held explanations for SUD is the self-medication hypothesis. The self-medication hypothesis suggests that the distressing psychological state associated with other mental health issues and stress is subdued by the psychotropic effects of substances and as a result increases the vulnerability for SUD (Khantzian 1985). In fact, a variety of substances have acute psychological side effects that are in opposition to the common symptoms of stress, anxiety, and depression. For example, cocaine use often results in increased positive mood, self-confidence and self-esteem, energy, and a decrease in fatigue (Dodgen and Shea 2000). Conversely, alcohol is often related to increases in relaxation and sedation (Dodgen and Shea 2000). In both examples, substances allow emotions to be removed from awareness and may be taken to avoid the distressing affect.

In support of the self-medication model, Johnston and O'Malley (1986) found that, in response to self-report questionnaires, 22% of US adolescents cited "To get away from my problems or troubles" as a reason for substance use. In a study by Suh et al. (2008), self-reported depressive emotion predicted a higher likelihood of preferring alcohol, which the authors suggest highlights the close association between the desire for change in affective state and alcohol use. Additionally, poor affect regulation, negative mood states such as depression, and poor coping skills have been identified as risk factors for SUD (Eftekhari, Turner, and Larimer 2004). Together, these data suggest that an attempt at self-medication is used to alleviate other distressing states.

As noted above, reward circuitry centers on many of the regions and connections disrupted in SUD, such as connections between the NAc, frontal cortex, and amygdala. Moreover, the effect most substances of abuse have on these regions is the inverse of what is associated with disorders such as depression, some forms of anxiety, and the exposure to chronic stress. For example, depression is associated with blunted striatal (i.e., NAc) activity and a reduction in dopamine and serotonin. Similarly, chronic stress has been linked to dysfunctions in the production and utilization of dopamine (Pani, Porcella, and Gessa 2000). Most substances of abuse, however, stimulate dopamine activity in limbic regions, affecting other neurotransmitter systems and enhancing the reinforcing properties of substances. Additionally, when psychostimulants and alcohol are used for a short amount of time, serotonin, another important component of the reward circuitry, increases its functioning capabilities. This supports the idea that those with psychological problems may try to self-medicate with these substances in order to reverse the effects of the blunted activity (Markou, Kosten, and Koob 1998). Finally, a substantial body of research indicates that nicotine compensates for some of the cognitive impairments (e.g., difficulty in learning processes) produced by psychological distress by activating receptors for the neurotransmitter acetylcholine, which is present throughout the mesolimbic pathway, and exciting different kinds of "interneurons" in the prefrontal cortex (Couey et al. 2007; Kenney and Gould 2008).

Essentially, it is possible that the psychologically distressed (e.g., anxious, depressed, stressed) brain seeks comfort and stimulation and other neural abnormalities are assuaged by the intake of substances. Unfortunately, though, self-medication not only potentially alters deficits associated with other psychological issues, but also activates ones associated with “wanting” (i.e., increased ventral tegmental area (VTA), amygdala, striatum activity) and other learning processes, so vulnerability to SUD may be increased.

Distress tolerance

Coinciding with the self-medication model, increased focus has been placed on the role of distress tolerance (DT) in the development and maintenance of SUD. DT has been defined as both the perceived ability to tolerate unpleasant states (Leyro, Zvolensky, and Berstein 2010; McHugh and Otto 2011) as well as the ability to persist in goal-directed activity when experiencing psychological distress (Brown et al. 2002). In the case of SUD, it is hypothesized that low DT is associated with an amplification of both somatic (e.g. withdrawal symptoms) and emotional distress leading to increased use of avoidance-based coping (Zvolensky and Otto 2007). Put simply, individuals with this particular propensity for difficulties in tolerating distress may be at increased risk for experiencing negative emotional states as well as somatic stressors, such as withdrawal symptoms or pain, as intolerable, making them more likely to engage in avoidance-based coping behaviors such as self-medication to quell their distress.

In support of this theory, a number of studies have noted a link between low DT and increased levels of substance use including alcohol, cannabis, and cocaine (Buckner et al. 2007; O’Cleirigh, Ironson, and Smits 2007). Additionally, there is considerable evidence to suggest that individuals with low DT are more likely to specifically endorse coping motives as a contributing factor for their use (DeMartini and Carey 2011; Johnson et al. 2010; Zvolensky et al. 2004). Finally, low DT is also associated with a shorter time to relapse following periods of abstinence (Brandon et al. 2003; Brown et al. 2002; Daughters et al. 2005a; Zvolensky et al. 2001). This decreased latency suggests that low DT may be associated with an increased sensitivity to the range of emotional and physical withdrawal symptoms that emerge during a quit attempt. Indeed, low DT is also associated with higher rates of dropout from substance abuse treatment (Daughters et al. 2005b).

Despite the abundance of evidence implicating DT in the addictive process, studies investigating neurobiological mechanisms of DT are only recently beginning to emerge, with much of this line of research limited to animal models. Further research is needed, as greater clarification of the neural correlates of low DT will aid in the understanding of why some brains may be predisposed to SUD. Though speculative, Trafton and Gifford (2011) suggest that DT is a product of reward-driven behavior such that individual variability in this construct can be explained by differences in core-processes underlying “wanting” (i.e., incentive salience) and

learning. Specifically, the learned ability to adapt reward-seeking behavior based on availability of reward opportunities in the environment and the ability to inhibit immediate responding may be compromised in individuals with low DT. Essentially, DT may play an important role in both the hyperactive “wanting” and dysfunctional learning associated with development of SUD.

As previously described in this chapter, reward salience relies on dopamine neurons projecting into the NAc and OFC, such that rate of firing of these neurons dictates whether or not an individual should engage in a habitual (or addictive) behavior to gain immediate relief (Abler et al. 2006; Di Chiara 2002; Roesch and Olson 2004). In the case of substance use, individuals with low DT may be particularly prone to overvalue the reward or relief associated with use contributing to increased addictive behavior. Interestingly, evidence suggests that a number of factors can influence the reward value of indulging immediate impulses to obtain relief. For instance, Tice and colleagues (2001) noted that individuals who tend to eat for coping motives suspended this behavior when manipulated to believe that eating following a negative mood induction would not produce the expected relief, while Magen and Gross (2007) manipulated the value of reward through expectancy and noted that persistence at distressing tasks increased when participants were specifically told that they were engaging in a test of willpower rather than performance.

With regard to associations between low DT and dysfunctional learning, Trafton and Gifford (2011) suggest that reward-seeking behavior may represent a complex interplay between reward availability and a subpopulation of inhibitory medium spiny neurons (MSN) in the NAc that inhibit reward-seeking when they fire (Taha and Fields 2006). Therefore, those with low DT may not simply have a faulty “on” switch that prompts reward approach due to the aforementioned increases in dopamine firing, but also a faulty “off” switch such that reward-seeking is not properly inhibited based on the environmental availability of reward. This would suggest a particular vulnerability to aspects of dysfunctional learning in SUD such as perseverative drug-seeking responses even after the drug reward is removed (Wilson, Sayette, and Fiez 2004).

A final process that may contribute to individual variability in levels of DT is the ability to inhibit an ingrained, habit-like, response; a process largely governed by the prefrontal cortex as well as associated brain regions including the ACC, ventral prefrontal, right inferior parietal, and right dorsolateral prefrontal cortex (Chambers et al. 2009; Garavan et al. 2002). As Trafton and Gifford (2011) hypothesize, behaviors associated with low DT such as substance use may result from deficits in the inhibitory functioning of these regions. For individuals with low DT, these habitual behaviors, such as engaging in self-medication as a means of coping with negative affect, cannot be inhibited even in instances where the long-term contingency would favor longer toleration of distress. This is consistent with the findings related to dysfunctional learning in substance users, where previous studies indicate deficits to brain regions associated with executive functioning and behavioral inhibition (Goldstein et al. 2007; Goldstein and Volkow 2002; Liu et al. 1998), as well as studies suggesting greater impulsivity and poorer delayed discounting (Coffey et al. 2003).

Taken together, this line of research suggests that not only does the psychologically distressed brain seek out comfort but also that differences in DT may predispose certain individuals to engage in substance use. That is, those with low DT may overvalue the reward or relief afforded by substances and demonstrate increased difficulty in disengaging from reward-seeking behavior as well as inhibiting habitual use in the face of psychological or physical distress.

Conclusions

Increased understanding of the neurobiological and psychological processes involved in reward-functioning have greatly enhanced our understanding of how individuals can make the shift from occasional substance use (e.g. a glass of wine with dinner, use of opiate pain medication following dental surgery) to patterns of abuse and dependence. Indeed, SUD are no longer viewed as simply a moral failing or weakness on the part of the sufferer, but rather a complex interplay between neurobiological and psychological factors that influences the way in which a given individual processes information in the environment and seeks out reward.

In the current chapter, we have explored advances in reward processing and its relationship to SUD. As described, development of such disorders may represent the “hijacking” of neural circuitry related to reward, most prominently in the domains of “wanting” and learning (Berridge and Robinson 2003). This “hijacking” model supports the notion of a feed-forward cycle whereby substance use over time not only alters incentive salience (i.e., “wanting”) and predictive associations related to the value of the reward (i.e., learning) but also promotes structural changes further perpetuating processing deficits in these areas. Importantly, the majority of these changes in reward circuitry and processing occur outside of an individual’s awareness such that his/her subjective experience (i.e., no longer experiencing use as pleasurable or expressing a desire to stop using) may be in complete contrast to the neurological mechanisms of “liking” and “wanting,” thereby potentially sabotaging his/her intentions to discontinue use. This discrepancy highlights the need to consider neurobiological processes, in conjunction with psychological theories of substance use, to enhance understanding of the interplay between implicit activation of reward circuitry and an individual’s subjective experiences of psychological contributors to drug use such as depression, anxiety, and distress more broadly (Cheetham, Allen, Yucel, and Lubman 2010; Kreek and Koob 1998).

Although there have been great gains related to our understanding of the pathogenesis of SUD, further research is needed to fully understand the neurobiological and psychological deficits associated with problematic use. For instance, evidence suggests a distinction between the underlying processes of “wanting” and learning; however, there is also considerable overlap and interplay between these two constructs necessitating further study to determine how they are specifically parsed within the brain (Berridge et al. 2009). Additionally, future research should continue to explore how psychological theories of substance use relate to underlying

mechanisms of reward circuitry. For example, because limited longitudinal research has been done that integrates neurobiology and psychology, little is known about the directionality of dysfunction in the reward system and self-medication tendencies: does pre-existing reward dysfunction increase the likelihood of using substances to reduce psychological distress, or does the use of substance with a premorbid psychopathology impact reward processes resulting in dysfunction? Similarly, investigation into the neurobiological underpinnings of DT is only in its infancy, with most findings limited to animal populations or theoretical supposition from existing studies of reward circuitry (Trafton and Gifford 2011). Improved understanding of both neurobiological and psychological contributors to SUD, as well as the interplay of these processes, will not only enhance our understanding of the onset and maintenance of such disorders, but also aid in the development of targeted interventions to better address problematic substance use.

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Part IV

Studying Drugs in Society

Ethnographic Studies of Drugs in Communities

Sheigla Murphy, Paloma Sales, and Sheigla Averill

Introduction

The ethnographic project begins when an investigator identifies a community known for having drug-related activities within its borders. Through interactions with community members, key informants, and direct observations, the ethnographer confirms the community's status as a drug setting, and the work commences. The nature of drug use, both legal and illegal, is embedded in the local settings where drugs are procured and consumed. Community settings change as new events occur (e.g., changes in law enforcement practices), new drugs come on the scene, or new ways to use old drugs emerge (e.g., smoked crack cocaine). "Therefore there is no such thing as a definitive drug ethnography of a given community, only a particular ethnography at a given point in time" (Page and Singer 2010:180).

Ethnographic work takes its practitioners out of their laboratories and offices and into the streets, alleyways, bars, public housing, and parks where drug users live, gather, and carry out their everyday activities. Participant observation, informal and depth interviewing, focus groups, targeted sampling, and network-based sampling are the tools of the trade. Targeted sampling and network-based sampling were developed by ethnographers striving to study so-called "hidden populations," or populations that live somewhat outside the mainstream. To date, the social and legal consequences of being identified as a drug user continue to be an effective motivation for drug users from all walks of life to hide their drug use. In the United States, ethnographers have found that the criminalization and stigmatization of illicit and illegal drug use helped create the health and social problems that required ethnographic methods to access appropriate populations in order to ultimately develop effective public health strategies and interventions.

Our project in this chapter is to provide readers with a historical overview of drug ethnographies to delineate their contributions to the field of drug studies. We were not able to include all the major ethnographic studies or all of the areas on which ethnographers have shed light in this arena, but we have selected works that outline the history of ethnographic contributions to the field of drug research. We begin by situating the ethnographic studies of drugs in communities with a brief description of the history of criminalization and medicalization of narcotics use and users in the United States. We move on to early ethnographies of drugs in communities, centering on constructions of opiate users, drug smugglers, and cocaine users, the advent of AIDS ushering in an important era for ethnography with the proliferation of projects aiming to stem the tide of AIDS transmission by targeting injecting drug users, and women drug users who engaged in sex work to fund their drug use. Ethnographers found that while not all women who used drugs were involved in sex work, this putative association increased the stigmatization of all women who used drugs. These drug scholars challenged closely held beliefs about the relationship between sex work and drug use, as well as the nature of the work itself. We then look at drug distribution and the roles of social identity, types of drugs sold, and social location as they pertain to understanding drug sellers and drug markets. We outline the ways in which findings from ethnographic studies of drug users from various racial and ethnic groups reveal how the intersecting factors of race and type of drug used played a crucial role in revealing the complex nature of sellers' social locations in their drug-using worlds. We end with a discussion of the future of ethnographic research of drugs in communities.

Brief History of Criminalization and Medicalization of Drug Use in the United States

Historically, social constructions and understandings of illicit and illegal drug use have seen notable transformations. In nineteenth-century United States, opiates in patent medicines caused serious addictions in large numbers of people. Cocaine was also available in various forms and could be easily purchased from drug stores, saloons, and grocery stores, where anyone could sample its effects by simply drinking Coca-Cola (Das 1993). However, neither producers nor consumers were treated as criminals (Lindesmith 1956). Drugs were readily available, legal, and relatively inexpensive, therefore users and addicts had no need to resort to criminal activity in order to obtain drugs. Early in the twentieth century, drug use was reconstructed as a social problem in need of governmental intervention, marking a transition in social constructions of opiate use from legitimate self-medication to a criminal activity (Acker 2002).

Drug use was added to a list of social ills, including gambling and prostitution, which were blamed for the generalized decay of society. There was a moral value attached to the use of opiates as the construction of the North American "junkie" was reinforced by medical language originating from two disciplines: psychology

and pharmacology (Acker 2002). The psychological viewpoint conceptualized the opiate user as having a personality defect or an addictive personality characterized by poor impulse control and moral weakness. The pharmacological perspective focused on the drug itself, with its powerful effect on craving, tolerance, and withdrawal. Of course, both disciplines' proponents had much to gain professionally from their engagement with these perspectives. Psychologists, within a highly specialized field, could treat the opiate user to rectify his personality defect, while pharmacologists could embark on the research and development of non-addictive analgesics to replace heroin, and in the process, challenge Germany's postwar domination of the field of pharmacology (Acker 2002:10). Leaders of both of these disciplinary arenas supported the political program of drug control. Drug control moved opiate use intervention efforts out of the public health context, where physicians legally prescribed opiates to their patients, and into the criminal justice system.

In the United States, those advocating a criminal justice approach to controlling drug use succeeded in setting long-term narcotics policy with the passage of the Harrison Narcotics Tax Act of 1914 (Angarola 2006), a federal law that regulated and taxed the production, importation, and distribution of opium, coca leaves, and all their derivatives. The language in the Act did not include any specific mention of the "addict," nor did it include any provision that would address the problem of addiction (Lindesmith 1956). However, it prohibited doctors from prescribing opiates outside the scope of medical treatment, since opiate addiction was not considered a disease, but a personality defect (Lindesmith 1956; Angarola 2006). Acker (2002) points out that constructions of the North American "junkie" had serious consequences for opiate users of the time, and also had a long-lasting influence upon theories of addiction and drug control policy. Within this sociopolitical climate, ethnographers entered the field of drug abuse research and influenced the social constructions and understandings of the social processes of drug use and addiction.

Early Ethnographies of Drug Use

Bingham Dai (1937) and Alfred Lindesmith (1947) were the first ethnographers to study opiate addiction as social behavior, and both studied addiction in the social contexts in which it was embedded, employing both informal and in-depth interviews with opiate addicts. Dai and Lindesmith developed sociological perspectives that challenged the views of policymakers and the general public concerning the etiology and treatment of addiction (Acker 2002). Dai postulated that moral and legal approaches to opiate addiction alone were ineffective because addiction was conditioned to the individual's relationship to his or her social surroundings. Lindesmith (1947) theorized that opiate addiction was not just the product of one's exposure to opiates, but rather a result of a dramatic shift in a person's mental and motivational state. The addict had first to make the connection between the use of the drug and withdrawal symptoms before assuming an addict identity. Howard Becker (1963) implemented Lindesmith's theory of addiction while studying a

community of jazz musicians who used marijuana. His study was groundbreaking in the sense that he was studying a drug-using subculture as a functioning group with its own mores, which defined itself in opposition to mainstream culture. Becker found that to be appreciated, marijuana's psychoactive effects had to be learned in social interactions between initiates and experienced users, once again pointing to drug use as a social process. These early ethnographies of drug users inspired those that followed, situating ethnography at the heart of studies of drug use and addiction (Becker 1963).

Ethnographic Studies of Drugs in Communities

Since these early seminal works, sociologists and anthropologists have continued to be interested in researching drug use and drug users, and for some, ethnography was the essential component in gathering information. While there were certain obstacles and risks that accompanied ethnographic fieldwork in drug-using communities, compared with purely quantitative data collection, this method allowed investigators fuller understandings of the drug users they studied, focused on the relevant social pressures and rules, motivations for use, the ways in which drugs affected communities, and in turn, how communities influenced drug use from the study participants' perspectives. The method was so effective that "[d]uring the 70s, ethnographic studies of drug users proliferated, focusing on specific groups of drug users defined by gender, race, class, neighborhood, and type of drug used" (Sales 2009: 47).

Ed Preble and John Casey (1969), for example, studied the lives of heroin users among young marginalized males in New York's poorest neighborhoods. They found that young men at the periphery of mainstream culture were nonetheless able to carve out roles and status hierarchies for themselves through their drug buying and selling careers. Robert Weppner, an editor and contributor to *Street Ethnography – Selected Studies of Crime and Drug Use in Natural Settings* (1977) traced the etiology of ethnographic research methods. Weppner's classic collection of papers was generated from a National Institute of Drug Abuse-sponsored workshop on ethnographic field research. The contributors discussed interview techniques, "use of indigenous observers as informants," practical difficulties of street ethnography, advantages of different interview locations, legal issues with participant observation of drug use and sales, and ethical issues/necessity of informed consent (1977).

Patricia and Peter Adler added to a greater understanding of the process of conducting ethnographic research with hidden populations. As graduate students, the Adlers conducted ethnographic fieldwork from 1974 to 1980, engaging in participant observation with drug dealers and smugglers. Patricia Adler (1993) described how they formed close friendships with the people they were studying, and the advantages and obstacles (and sometimes dangers) entailed in such close involvement with one's research subjects, particularly when studying "hidden populations," or people with deviant and illegal lifestyles. She examined the ethics of

participant observation, the practical difficulties that drugs can cause for the gathering of data, and the risks – both legal and physical – of studying deviant behavior. Adler concluded that “[t]he aggressive research strategy employed was vital to [the] study” (1993:108), because the trust she and her husband developed with their informants allowed them access to information they never would have otherwise obtained (Adler and Adler 2003).

In the mid-1970s, Waldorf and colleagues (1991) studied the long-term impact of cocaine use in a small network of long-term, heavy cocaine users. They conducted a follow-up study with the same cohort 10 years later. Most of their participants successfully employed control strategies that helped them navigate their day-to-day lives with minimal interference from their cocaine use. Findings suggest that addiction was due to neither pharmacology nor personality, and that in fact it was dependent on users’ social resources, organizations of their lives, and cultural practices that framed their settings of use. These researchers’ work represents an important contribution, not only for our understandings around the long-term effects of cocaine use, but to the work of ethnographic methods. Their ability to maintain contact with their participants in a span of 10 years speaks to the importance of establishing rapport and trust between researchers and subjects.

Injection Drug Use and the AIDS Epidemic

The late 1980s and early 1990s saw a surge of ethnographic studies of intravenous drug use prompted by the advent of the AIDS epidemic. J. Bryan Page and Merrill Singer (2010), reviewing the ways in which the AIDS epidemic stimulated a resurgence of institutional (funding sources) and public health practitioners’ approbation of ethnographic methods, write:

By the time the scientific community made its first characterizations of the AIDS epidemic, drug ethnographers had developed skills that would prove to be crucial to understanding the behaviors that powered the transmission of HIV... In the midst of an epidemic in which self-injection behaviors represented a clear opportunity for the spread of HIV, researchers and interventionists working in communities across the United States and in many countries needed the kind of information that ethnographers could obtain through their methods. (84)

Researchers conducted investigations into the lived experiences of intravenous drug users (IDU), including injecting practices, syringe sharing, hygiene, and the effects of public policy and the criminalization of injection drug use. Ethnography – particularly participant observation and in-depth interviews – proved to be a valuable tool for identifying underlying factors behind drug use and drug-using practices within a variety of communities, which in turn improved the development of effective harm reduction and intervention strategies, most notably syringe exchange programs and safe injection facilities.

In 1988, Harvey Feldman and Pat Biernacki conducted ethnographic research in San Francisco, using direct observation and extended personal interviews to identify syringe-using scenes and practices of injecting drug users outside of treatment programs. They found that IDUs were very interested in AIDS and their potential risk for infection, and that they expressed a willingness to help gather information about AIDS transmission and its prevention. They also found that sharing needles was very common among all the IDU networks they studied, even when consumers were aware of the risk of AIDS transmission through contaminated needles. IDUs typically continued to share needles, despite the risks, because of the criminalization of syringe possession and the scarcity of clean syringes. Also, at that time, IDUs had very little knowledge of appropriate sterilization practices for preventing the spread of AIDS and other blood-borne diseases. An important focus of these investigations was the role played by social marginalization in syringe-sharing practices. Recommendations included: a review of public policies, consideration of decriminalizing syringe possession and instituting needle exchange programs to ensure access to sterile equipment, and educational outreach for safer injection practices (see also Murphy 1987).

Stephen Koester's 1994 ethnography of drug injectors in Denver analyzed needle-sharing motivations and concluded that in addition to psychological and cultural explanations for sharing syringes, the practice of sharing was also (and possibly primarily) motivated by the scarcity of syringes resulting from legal prohibitions. He recommended a reconsideration of paraphernalia laws, as they "may no longer be serving the public interest" (1994). Carl Latkin and colleagues (1994) also analyzed the social contexts of injection drug behaviors and its relationship to HIV transmission. Open-ended interviews were completed with 630 inner-city IDUs in Baltimore, Maryland, in order to examine various IDU-related factors such as injection settings, injection partners, needle sharing, and use of contaminated needles. Findings from a multiple regression analysis indicated that the frequency of injecting with others and injecting in semipublic areas correlated to the frequency of using and sharing dirty needles. The investigators' recommendations included developing HIV-prevention intervention strategies that targeted settings as well as behaviors.

Jean Paul Grund and colleagues (1991), studying needle sharing in Rotterdam, presented a detailed overview of their ethnographic study of heroin users in that region. Participant observation was the primary method of data collection, and these qualitative data were complemented with quantitative records of significant events and demographic information for the research subjects. The authors described both qualitative and quantitative findings, reporting that increased availability of drugs and clean equipment led to a significant decrease in needle sharing among IDUs, but they also asserted that sharing behaviors fulfilled a social and community function that with the advent of AIDS was gradually transformed from an expression of solidarity to a health threat. They recommended intensive counseling in addition to education about safer injection practices for risk prevention and harm reduction.

Many ethnographers who have studied drug use have observed efforts made by drug users to minimize the negative effects it can have on their lives. Power and colleagues (1996) studied social networks of injectors in three different sites in England and learned about the harm-reduction strategies employed in these communities. IDUs demonstrated informal practices for preventing HIV transmission, such as personalizing syringes. Power and colleagues argued for the inclusion of these practices in peer educational outreach, while also emphasizing the social motivations for needle sharing (1996).

Stephen Sifaneck and Alan Neaigus (2001) conducted ethnographic research between 1996 and 1997 among non-injecting heroin users (NIUs) in New York City. These researchers explored how the shifting heroin markets on the Lower East Side affected routes of administration and opiate use patterns for NIUs, particularly given the increased levels of aggressive police enforcement at the time of their writing. The investigators found the heroin market to be highly adaptable, largely as a result of expansion through mobile communications and the extension of sales directly into suburban neighborhoods. Participants had a variety of responses to the restrictive markets, including periods of total abstinence, moderated or reduced levels of consumption, and resorting to alternative drugs already part of established patterns of consumption (Sifaneck and Neaigus 2001). There was no general trend toward changing routes of administration to injecting, at least in the short term.

Small and colleagues (2006) utilized participant observation and semi-structured interviews as tools in an ethnographic study of setting disruption and the overall effect on drug consumption activities made by a large-scale police initiative in Vancouver, the Citywide Enforcement Team (CET), which attempted to dismantle the open drug market. Researchers concluded that the intensified police presence motivated IDUs to inject in riskier environments, to rush their injection practices, abandon safer injection practices, and to dispose of their syringes unsafely. The CET also negatively impacted the access of health services for IDUs, as well as their access to clean syringes and their willingness to carry syringes. Rather than eliminating drug-related activity, the initiative displaced it from its traditional locations to others in surrounding areas. The investigators delineated the adverse implications of the initiative for public health and public order.

Evidence-based Interventions

In response to findings and recommendations from these and other studies, grassroots, often volunteer-based organizations with both ex- and active users in their ranks, began operating syringe exchange programs and, years later, safe injection facilities. In 1995 Murphy and colleagues began a process evaluation of San Francisco AIDS Foundation's HIV Prevention Project, a Department of Public Health-sanctioned syringe exchange program. Data collection was completed in September 1995 and included participant observation and in-depth life history interviews with the research objectives of obtaining a deeper understanding of how syringe exchange

was implemented, utilized, and experienced. The investigators found that the syringe exchange program was very successful in changing the social, political, and physical environment for procuring sterile injection equipment, thus interrupting needle-borne disease transmission considerably. What the investigators called “satellite exchangers” facilitated the growing culture of harm reduction among IDUs by providing access to sterile injection equipment and health promotion information for those unable or unwilling to participate in syringe exchange themselves. They found that the material and cultural exchanges between providers and exchangers, and satellite exchangers and their peers, led to communication between IDUs and health and social service providers and more effective public intervention and service provision (Murphy, Kelley, and Lune 2004).

Ryan McNeil and colleagues (2013) led an ethnographic project in Vancouver, Canada. Fifty hours of ethnographic observation and 23 qualitative interviews were completed in a peer-run unsanctioned supervised injection facility (SIF) run by the Vancouver Area Network of Drug Users (VANDU). The facility was opened in response to a need for a safe site for people who required help injecting, as that population was “disproportionately vulnerable to drug-related harm, including HIV transmission” (2013:474). These investigators found that the unsanctioned SIF allowed IDUs who required injection assistance to escape drug scene violence, as well as minimized HIV and other disease transmission in addition to other health risks.

In the United States, National Institute on Drug Abuse funding for ethnographic research supported both the training and work of new ethnographers, spurring a renaissance of ethnographic projects. Ethnography and its methods (particularly participant observation and face-to-face interviewing) was an invaluable method for understanding IDU rituals and practices. Volunteer-based organizations (often active and ex-addicts, outreach workers, HIV research project staff) developed and implemented the interventions and harm-reduction strategies recommended by the AIDS investigators. Syringe exchanges proved to be successful, in no small part due to the close attention paid by program organizers to users’ perspectives and social contexts. One of the important findings of these ethnographies of IDUs was that men who used drugs had women in their lives who also used drugs and that, in fact, women were an even more vulnerable and difficult population to access.

Women and Drug Use

Elizabeth Ettorre (2007) in her seminal work *Revisoning Women and Drug Use* asserts: “Given that women drug users live on the margins of many, if not all societies, these women, similar to all people who live their lives on the margins, experience silencing and injustice” (4). Ettorre has argued for the need for gender sensitivity in the field of drug use (see also Fiona Measham 2002). Ethnographers studying women’s drug use have attempted to give voice to women drug users and to contest the politics of gender as simply a demographic variable. They created theoretical formulations that recognized and centered difference. The following ethnographers have

studied women's involvement in drug worlds and have focused their investigations on the ways that women do drugs differently.

In the early 1980s, Marsha Rosenbaum and colleagues conducted an ethnographic study of women opiate addicts in the San Francisco Bay Area, utilizing Dan Waldorf's theory of drug-using "careers" conceptualized as having discernible similarities to conventional careers (Waldorf 1973). The investigative team conducted in-depth interviews with 100 women addicts to explore their careers in heroin in order to formulate a better understanding of their lived experiences. Rosenbaum analyzed women's motivations for heroin use, how they experienced "funneling options" through various career stages of addiction, and obstacles to effective treatment. She noted the differential social stigma conferred on women users as compared with men, as well as between women from different social classes and cultural backgrounds, and the particular difficulties for women as primary caregivers for children both during active drug use and while in treatment. The challenges for women in methadone treatment were also examined, and recommendations included developing treatment-recruiting strategies that consider women's roles as primary caregivers for children, striving toward the destigmatization of the ex-addict identity, and continuing ethnographic research to identify the special and distinctive experiences, careers, and problems women have with drug use (Rosenbaum 1981).

In the 1990s in New York City, anthropologist Claire Sterk was spending her time learning from women who used crack. She established rapport with study participants by offering condoms, cigarettes, rides, and a nonjudgmental ear. Her strategy for gaining women's trust allowed her to observe them buying and using crack. She enrolled 149 women in her study and discovered that women occupied a variety of social roles including "Hustlers," "Hookers," "Queens of the Scene," and "Older Struggling Rookies." Sterk expected that women in crack scenes would perform sex acts for money to finance their drug use. She was surprised by the Older Struggling Rookies who had no prior experience with either drug use or sex work. For Sterk this reinforced the seductive nature of this new way (smoking rocks) to use an old drug of abuse (cocaine). The association between sex work and drug use was by this time well established in the scientific community and ethnographers set out to comprehend this relationship.

Sex work and drug use

Ethnographers have studied drug use and sex work from a variety of different perspectives. Jody Miller (1995) looked at the differences and similarities of gendered power relations for women who support their crack use with sex work as compared to street prostitutes in traditional pimp relationships with men. Lisa Maher (1997) looked closely at "sexed" work as gendered, racial resistance in a Brooklyn drug market (see also Dunlap et al. 1997). Kate Shannon (Shannon et al. 2008) led a participatory action research project in Vancouver, Canada, among drug-using women who undertook survival sex work. Findings demonstrated that several

factors derailed women's ability to practice harm reduction and take measures to prevent HIV transmission, including violent pimps and boyfriends, a dearth of safe locations in which to engage in sex work, and drug withdrawal and the need to exchange sex for drugs rather than money.

Stacey McKenna (2014) completed an ethnographic investigation of an understudied population of female methamphetamine users, and explored the practice of exchange sex as a means to support their drug habits. McKenna found that the participants' risk environments contributed to their structural vulnerability and shaped behavior in ways that were sometimes deemed transactional and risky by research, public health, or harm-reduction professionals. She concluded that in order to develop effective harm-reduction policies, it was necessary to understand how sexual practices are embedded in a structural context and "networks of reciprocity" within communities of methamphetamine users. These and other ethnographers challenged closely held notions concerning the relationship between sex work and drug use. Not all women who used drugs were involved in prostitution, yet the stigma associated with drug use and prostitution extended to all women who used drugs. The ethnographers who studied women discovered that while there was a serious disparity between the stigma conferred on women who used drugs and their male peers, the most serious social contempt was reserved for women who were unable to discontinue drug use while pregnant.

Pregnancy and drug use

Ettore reminds us that pregnant drug users, in particular, are affected by scientific research on reproduction and childbirth, in which gendered practices and norms are rooted. Scientific research helps to establish, manage, and perpetuate the "rules of pregnancy" which affect all women, drug using or not (2007:102). Joan Berlin contends that certain tendencies are entrenched in this type of scientific research: "these include an overstatement of women's biological and behavioral responsibility for the well-being of the next generation and underestimation of the importance of paternal biological and behavioral responsibility for the wellbeing of the next generation" (1995:384). Ethnographers in this area have found that pregnant drug users bear the encompassing burden of these scientific tendencies, and suffer severe stigmatization and often punitive policies.

In their study of pregnancy and drug use, Murphy and Rosenbaum described the social antipathy and at times self-imposition of badness or at least guilt by pregnant drug users (1999). Paloma Sales and Sheigla Murphy's (2000) subsequent study of pregnancy, violence, and drug use discovered that drugs were used by pregnant women to relieve pain, to create a sense of control, or to prevent partner violence and abuse. Women's drug use both exposed them to violence and protected or helped them cope with violence. And, like other studies have demonstrated, both studies found that worries or fears about the welfare of their children were very important for these women. The widely held belief that pregnant women did not

care about their children was not substantiated by ethnographers' investigations. In fact, pregnancy was found to be an opportune time for constructive interventions – for women to attempt abstinence or harm-reduction strategies (Murphy and Rosenbaum 1999; Sales and Murphy 2000).

Up until the early 1980s, women's drug use was almost an afterthought. Marsha Rosenbaum's *Women on Heroin* in 1981 and Claire Sterk's *Fast Lives* in 1999 mark the birth and growth of women and drug use as a substantive field. Miller, Maher, Dunlap, and McKenna challenged closely held beliefs about the relationship between sex work and drug use. Murphy's team found that pregnant drug users were not the media-depicted narcissists, absorbed in their own personal satisfaction with complete disregard for their children's well-being. The welfare of their children was a very important motivator for change for pregnant women and women with children. The ethnographers trying to learn about and understand women who used drugs gave voice to their study participants' perspectives as best they could. Sterk shared cigarettes and confidences in order to win women's trust and learned that many, but not all, crack smokers were involved in the sex trade. However, this putative association stained the reputation of all women known for using drugs and remained one of the major ideological supports for the continuing stigmatization and punitive policies that target pregnant drug users.

Whether we are studying opiate use, crack use, injection drug use, or women drug users, it is important to understand the context in which drug use occurs. An important element of that context is the drug market embedded in the communities we study and how drug users and sellers interact within that market. Next, we look at drug distribution and the roles of social identity and location as they pertain to understanding drug sellers and drug markets.

Ethnographies of Drug Sellers

As mentioned previously, Patricia and Peter Adler's ethnographic fieldwork provided valuable and nuanced understandings of the social hierarchies, rules, and arrangements in the illicit drug trade through their extraordinary access to a hidden population of drug smugglers. Patricia Adler (1985) noted similarities between deviant and legitimate careers: "Dealers' occupational involvement took the form of a career, with the same entry, socialization, and retirement stages found among all workers" (147). The appeal of the "fast life" coupled with difficulties maintaining legal jobs pulled former dealers back into dealing; thus, Adler characterized the dealer career as a pattern of "shifts and oscillations" in which people moved into and out of drug sales.

Ric Curtis and Travis Wendel (2000) conducted ethnographic studies of a variety of drug markets in Manhattan's Lower East Side, and argued that by focusing on markets as locales where distinctive types of distributor and consumer relationships were created and maintained, elements of market dynamism would emerge, allowing for the construction of theories of drug distribution. Curtis and Wendel offered

a novel method of comparing distinct drug distribution networks. The focus of their study was on heroin, cocaine, crack, and marijuana sales. They found differences in distribution networks by analyzing three different aspects of distribution: (1) the social aspects (freelance distributors, socially bonded businesses, and corporate-style distributors), (2) technical aspect (street-level sales, indoor sales, and delivery sales), and (3) organizational aspects. Curtis and Wendel's typology of drug markets was extremely useful for the theoretical formulations of the drug market research that followed.

Studies of ecstasy drug markets substantiated the relevance of sociodemographic characteristics and social bonds to understanding drug sales practices (Jacinto et al. 2008a, 2008b; Sales and Murphy 2007). Due to the nature of the buyer-seller relationships, ecstasy drug markets challenged existing understandings of drug distribution. The investigators conducted field observations and interviews with adults living in the San Francisco Bay Area. Interviewees were predominantly white, male, and middle to upper-middle class, housed, and in their twenties. All of the interviewees had used ecstasy, most (93%) before they began selling it. Participants resisted stigmatized drug dealer identities because they were not full-time sellers, only sold to friends, and did not market or push their drugs. Sellers constructed more palatable labels calling themselves *service providers*, *enablers*, or *facilitators*. Participants relied on friendships with customers to protect them from theft, violence, or police intervention.

While women may be more entrenched in the illicit drug world than in years past, women are still seen as less conspicuous drug sellers since men are more likely to fit the stereotypical notion of a drug dealer. Barbara Denton and Pat O'Malley (1999) studied successful women drug dealers in Melbourne, Australia, and demonstrated that the skills associated with familial relations figured significantly in the drug-dealing business. They analyzed the functions of various gendered traits in the drug trade.

Micheline Ludwick (nee Duterte) and colleagues (2015) conducted two exploratory studies of San Francisco Bay Area women involved in illicit drug sales who saw both advantages and disadvantages to being women in traditionally male-dominated drug economies. They interviewed women sellers of street drugs and prescription drugs. Study participants relayed their feelings about police detection, level of risk for arrest, safety issues, and the ways in which their gender shaped their experiences of risk. Women sellers perceived gender as a cover against risk in some instances, and managed their vulnerabilities by performing gendered actions and at times going against traditional gender expectations to protect themselves in harsh drug markets (Ludwick et al. 2015).

Ethnographers have made valuable contributions to understandings of drug markets. Patricia Adler's landmark study of cocaine sellers and traffickers in Southern California found that cocaine dealer careers are best characterized by shifts and oscillations due to their inability to hold down legal jobs. Curtis and Wendel developed a model based on social, technical, and organizational aspects of drug distribution networks, while students of ecstasy drug markets substantiated the relevance of sociodemographic characteristics and social bonds to understanding

drug sales practices. Findings from studies of ecstasy markets challenged existing understandings of drug distribution due to the nature of the friendship-based buyer–seller relationships. Women sellers continue to challenge stereotypical notions of drug dealers. Denton and O'Malley found women's mothering skills figured significantly in successful drug dealing practices. Ludwick and colleagues found gender was perceived as both a cover (protection) against risk (e.g., legal, violence) in some settings and as a risk in other settings where they had to adopt masculine personas to protect themselves in dangerous situations. All of these ethnographic studies of drug sales discovered that the intersecting factors of gender, race, and type of drug sold played a crucial role in perceptions of risk, revealing the complex nature of sellers' social locations in their drug-selling worlds.

Race, Ethnicity, and Drug Use

The importance of the influence of race and ethnicity on drug use has also been a central issue explored by a number of ethnographers. Philippe Bourgois carried out ethnographic research projects with heroin and speed injectors in San Francisco's Haight-Ashbury (Bourgois, Prince, and Moss 2004), crack dealers (Bourgois 2003, 1995), homeless heroin addicts in San Francisco (Bourgois, Lettiere, and Quesada 1997), and ethnic patterns among white and African American male heroin injectors (Bourgois et al. 2006). Bourgois examined the intersection of gender, age, race, and class as they pertained to power relations among and between different subpopulations.

Eloise Dunlap conducted ethnographic studies in New York City of drug-intensive African American households exploring the role of family resources in the career of female crack dealers (Dunlap, Johnson, and Manwar 1994). She described the process in which the crack-dealing adults in the household nurtured the involvement of the next generation in crack use and sales (Dunlap and Johnson 1996). Dunlap spent time in the intimate settings of these drug-intensive households, developing relationships and trust which allowed her to gather detailed information from participants that would have otherwise been guarded about their illicit activities.

Sexton and colleagues (2005) conducted a study of methamphetamine use among African Americans in rural communities in Arkansas and Kentucky, employing qualitative interviews with 86 drug users. Their findings demonstrated a low prevalence for methamphetamine use in this community. Researchers analyzed possible barriers to the diffusion of methamphetamine use among African Americans in the rural south. Avelardo Valdez and Stephen Sifaneck (2004) completed an ethnographic study of 160 Mexican American male gang members in South Texas, and examined the role these men play in drug markets, as well as the relationship between their drug use and drug sales. The investigators developed a four-part typology based on gang type and gang members, and they found that many members were user/sellers rather than profit-oriented dealers, and that members' access to drugs correlated to the proximity of Mexican drug markets, among other factors.

Ronald Glick and Joan Moore (1990) gathered five ethnographic accounts of drug use and dealing among Hispanic communities throughout the United States. The social context of drug users in Hispanic cultures was discussed, including the importance of family, traditional sex roles, the relationship between addiction, poverty, and low educational attainment, and drug use as self-medication for the stress associated with acculturation and intergenerational conflict. Researchers stressed the importance of culturally sensitive treatment and intervention strategies.

Other ethnographers have explored how specific cultural contexts impact drug use patterns, practices, and perceptions. Karen Joe-Laidler (1996) combined ethnographic and grounded theory methods to consider drug use among Asian Pacific Americans, and examined how their drug use was influenced by their culture. She directed an ethnographic study of female methamphetamine users in Hawaii, and uncovered the importance of reciprocal relationships between family and cultural traditions on the one hand, and their drug use and user networks on the other.

Cathy McIlwaine and Caroline Moser (2004) investigated the widespread consumption of drugs and alcohol among poor urban communities in Colombia and Guatemala, and explored the relationship between community tolerance of drug use and concentrations of violence. They suggested the importance of considering community attitudes toward and tolerance of drug and alcohol use when developing response strategies. In 2013, Isolda Fortin and Jane Bertrand published their ethnographic study, conducted among middle-class youth in Guatemala City, in which they used the PEER methodology to explore how drug use relates to risk for HIV transmission among this population. The interviewers were peers of the participants, and therefore were also drug users, mostly of non-injection drugs, including cocaine, marijuana, ecstasy, LSD, and mushrooms. Researchers found that most participants had a favorable opinion of drugs as social facilitators, though they did fear pregnancy, discovery of their drug use, overdose, and addiction. However, HIV infection was not a major concern for them.

Ethnographers have explored the role of the intersection of race, ethnicity, culture, and type of drug in how users experience drug use. These studies point to the importance of framing drug studies within a racial/ethnic/cultural context. They call for a culturally sensitive approach to both the study of drug use in communities and prevention and intervention strategies.

Discussion/Future Directions for Ethnographic Studies of Drugs in Communities

The history of drug use and resulting social policies could be characterized as moving drug users from the mainstream to the marginalized. Ethnographers from the late 1930s and 1940s and beyond contributed to sociological theorizing about drug use and drug users as a social process. The success of ethnographic drug research is linked inextricably with the fact that in prohibitionist cultures, drug users live outside the conventional tent because mainstream society stigmatizes and

condemns them (Bourgois 2003). Ethnography offers the means of accessing hard-to-reach populations of drug users and the valuable information they share that is essential in providing deeper understandings of their experiences as drug users. By design, ethnography is a methodology that incorporates rapport-building, self-disclosure, nonjudgmental sensitivity, genuine concern for the study participants' perspective and experience, and involvement in the lives of study participants in its approach to data collection. These features of ethnography provide the basis for a relationship built on trust that allows the researcher to ask provocative personal questions and expect thoughtful, serious answers from individuals who have learned to be extremely wary (Bourgois 2003).

Some common themes raised in discussions about ethnographic research on drug use include the ethical implications of studying populations involved in deviant or illicit behavior, the practical difficulties and dangers of gathering information from such populations, and the stigma attached to both the population being studied and the ethnographers studying it. There are practical and ethical difficulties involved with participant observation of drug use, including confidentiality, researcher integrity, the balance of participation versus observation, and the theory of the social construction of meaning. Recurrent also is the belief that ethnography provides a fuller, more accurate, and more useful portrait of the particular community being studied, and the social and cultural influences unique to it, which in turn allows for the development of more successful outreach and intervention (Moore 1993).

Philippe Bourgois addresses both the complications and the benefits that come with ethnographic research in the study of drug use. His discussion of epidemiological cohort and participant observation studies of IDUs in Montreal argues for a "cross-methodological dialogue between epidemiology and ethnography" and recommends use of ethnographic research for public health interventions (Bourgois and Bruneau 2000).

In order to truly understand the impact of drugs in communities, ethnography needs to expand and encompass other theories and methodologies that offer varied lenses and perspectives. It is also very important, whenever possible, to include community members in the research as experts and partners throughout the research process in order to address, to some extent, some of the concerns that have arisen in ethnographic research. These concerns can be addressed through community-based participatory action research (CBPR) – an alternative research paradigm based on a collaborative approach among researchers and community members from conception to research design, analysis, interpretations, and conclusions. CBPR is the end-product of several terms, including community-based research, action research, and participatory action research (Minkler and Wallerstein 2002). Nina Wallerstein and Meredith Minkler refer to two distinct historical traditions, Northern and Southern, also referred to as the Traditional and Radical forms of action research (O'Brien 2001). The Northern or Traditional roots can be traced to Kurt Lewin, the social psychologist credited with coining the term "action research" in the 1940s (Adelman 1993). He emphasized the importance of "intergroup relations" – relations between researchers, the subjects of their studies, and groups defined by area of expertise.

Lewin rejected the notion that in order for researchers to be “objective” they needed to remove themselves from the community of interest. The Southern or Radical roots originated in the so-called Third World through the work of Brazilian Paulo Freire (1972), Colombian sociologist Orlando Fals-Borda (2006), and East Indian Rajesh Tandon (Tandon and Kak 2007), who believed communities must identify their own problems and solutions.

Members of the community to be studied can provide insider knowledge and information for a research design that is socially and culturally sensitive. Their engagement in the analysis and interpretation of the data, and in the writing up of conclusions, can provide an insider’s realism and truth that moves knowledge beyond the limitations of the researcher as an outsider. At the same time, community members’ involvement in every step of the research will go a long way in ameliorating the practical difficulties and dangers of gathering information and in diffusing the stigma attached to the population being studied. This type of collaborative effort has the potential to yield well-informed research methods and culturally sensitive study instruments, as well as more robust hypotheses that can contribute to more effective prevention and intervention efforts, all the while addressing the ethical concerns around researching populations engaged in illicit activities.

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Measurement and Design Challenges in the Study of Drugs and Society

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Introduction

In 2007, the costs of illicit drug use in the United States totaled an estimated \$193 billion (National Drug Intelligence Center, 2011), a societal burden that reflects a broad array of drug-related harms: overdose and premature death, physical injury and disease, mental illness, crime and disorder, decreased productivity, and child maltreatment, among other consequences (Babor et al., 2010). Given the scope of these harms and their associated costs, which rival other chronic medical disorders such as diabetes and obesity (National Drug Intelligence Center, 2011), accurate data are essential for assessing the nation's efforts to reduce the consequences of illegal drugs (National Research Council, 2001).

Although controlling harmful drugs has long been a top domestic policy issue, US drug abuse monitoring capabilities have never matched this level of public concern. Well into the 1960s, official data characterizing the nation's drug problems were seriously lacking, with US Attorney General Robert Kennedy lamenting this state of affairs in a 1962 speech to the White House Conference on Drug Abuse: "Not only do we not have a comprehensive program; we do not have sufficient reliable information on which to even base such a program" (quoted in Frydl, 2013:242).

While notable advances have been made in the nation's drug-monitoring capabilities over the past four decades, measurement and design limitations continue to impede a thorough understanding of illicit drug problems and effective policy responses. A National Research Council committee charged with assessing the status of federal drug data systems concluded little more than a decade ago that "the nation lacks the data needed to inform policy" and, even more pointedly, that "nearly all of the uncertainties regarding the effectiveness of drug control policies stem from

the limitations of existing data on illegal drugs” (National Research Council, 2001:275–276). A follow-up report, echoing this critical assessment, concluded that despite modest improvements “the data available for understanding why the nation still has a large demand for illegal drugs is woefully inadequate” (National Research Council, 2010:89). It remains difficult even now, for instance, to generate reasonably bounded estimates of the number of chronic drug users in the United States, and for drugs such as methamphetamine that are not captured well in current data systems the task is nearly futile (Office of National Drug Control Policy, 2014d).

Against this backdrop, this chapter charts some of the more noteworthy measurement and design challenges in the study of illicit drug problems over the past quarter-century – a period that coincides with the creation of the Office of National Drug Control Policy (ONDCP) and federal efforts to improve national data systems for drug policy monitoring and analysis (Haaga & Reuter, 1991). In addition to assessing the quality and utility of drug data systems, this chapter examines recent developments and ongoing challenges in drug problem measurement, approaches to monitoring drug policy outcomes, and research design for drug policy decision-making.

Assessing the Quality and Utility of Drug Data Systems

Measuring hidden and stigmatized behaviors such as illicit drug use and associated consequences is a challenging task. A sizable literature has accumulated over the past 25 years assessing the measurement capabilities and limitations of the nation’s drug data systems (e.g., National Research Council, 2010; Mounteney, Fry, McKeganey, & Haugland, 2010; National Research Council, 2001; Caulkins, 2000; Ebener, Caulkins, Geschwind, McCaffrey, & Saner, 1993; General Accounting Office, 1993; Haaga & Reuter, 1991). Although much of this work focuses on the accuracy and precision of drug indicators collected by large-scale, federal data systems, it also addresses the practical utility of drug data systems routinely used for drug policy monitoring and analysis.

Validity and reliability

Good data is the foundation of effective policy (Mounteney et al., 2010; General Accounting Office, 1993). An overarching question concerning any data system is how well it measures the constructs that fall within its dominion (Caulkins, Ebener, & McCaffrey, 1995). General surveys of household and student populations may produce valid prevalence estimates for commonly used substances, for instance, but they are less suitable for measuring rarer substances or highly stigmatized behaviors (Mounteney et al., 2010). As a case in point, the National Survey on Drug Use and Health (NSDUH) produces credible estimates of the number of current marijuana users, but captures just 6% of the number of chronic heroin users according to one

recent estimate (Office of National Drug Control Policy, 2014d). Likewise, Uniform Crime Reports (UCR) statistics on drug arrests are commonly used to quantify hard-to-measure aspects of drug markets, but these data may say more about local law enforcement priorities and resources than the actual size and scope of these markets (Mosher, Miethe, & Hart, 2011). Validity must be understood, then, as a function of overall data system integrity as much as how specific indicators are conceptualized and employed for a given analytic purpose (Brownstein, 2000).

Reliability is another integral feature of large-scale data systems, wherein concern lies with the comparability of indicators across time or units. As a case in point, Sevigny (2013) analyzed four decades (1970–2010) of data from the Potency Monitoring Program (PMP), a federal program that forensically analyzes seized marijuana samples, and found evidence of temporal confounding in the quality of tested marijuana. In particular, samples tested from the 1970s and 1980s were relatively more degraded than samples from recent decades due to a shift in the market from foreign to domestic sources of supply and improvements in drug evidence storage practices. To cite another example, Warner et al. (2013) investigated the completeness of drug-involved deaths reported in the National Vital Statistics System (NVSS) and found that between 2008 and 2010 the percentage of drug intoxication deaths attributable to a specific drug ranged from 35% to 99% across the 50 states, potentially biasing cross-state comparisons of drug-specific overdose rates.

Minimizing methodological and conceptual failures in the collection and use of drug-related data is critical to improving the value of the policy information and conclusions produced (Johnson, 2012). Assessing the validity and reliability of both whole data systems and specific indicators is a first-order imperative for drug monitoring and analysis, but utility also derives from a number of other practical considerations, reviewed next.

Availability and accessibility

As recently as the 1980s, disciplinary guidelines for the maintenance and dissemination of secondary datasets were voluntary and idiosyncratic, resulting in their infrequent reanalysis for scientific and policy research (Haaga & Reuter, 1991; Hedrick, Boruch, & Ross, 1978). Since then, considerable advances have been made in data-sharing infrastructure, facilitating wider dissemination of microdata for drug abuse monitoring and policy evaluation. Federal datasets such as the Youth Risk Behavior Survey (YRBS) and Fatality Analysis Reporting System (FARS) are freely available from dedicated government data portals, and even more centralized data access is provided by repositories such as the Inter-university Consortium for Political and Social Research (ICPSR) and its special data archives (e.g., the Substance Abuse and Mental Health Data Archive).

Despite broad-based improvements in drug data availability and accessibility, it remains exceedingly difficult for independent investigators to access many key policy-relevant datasets (Sevigny, 2011; National Research Council, 2010).

For example, access to longitudinal panel data from the federally funded Monitoring the Future (MTF) study of youth drug use requires a special data request that may be fulfilled “at requestor’s cost” (National Research Council, 2010:94–96), and onetime plans to make data on drug seizures from the DEA’s National Forensic Laboratory Information System (NFLIS) “available to approved requestors via the Internet” have yet to be realized (Office of National Drug Control Policy, 2003:94). Moreover, research access to many drug-related government datasets (e.g., the System to Retrieve Information from Drug Evidence) is not governed by any clearly defined protocol. High end-user costs also impede access to many useful drug data systems. For example, the expense of obtaining micro-level data on state hospital admissions from the federally managed Healthcare Cost and Utilization Project (HCUP) can be prohibitive for most investigators. Finally, access to many key databases with policy relevance is summarily blocked for research purposes. For example, the National Precursor Log Exchange (NPLEx), which tracks retail sales of potential methamphetamine precursors, restricts access to all but law enforcement agencies and participating pharmacies.

In short, even though the current level of access to policy-relevant datasets for drug monitoring and research is unprecedented, the use of many public and private data holdings continues to be limited by unwarranted access restrictions, unclear data-sharing protocols, and high cost barriers. There are strong arguments for additional efforts to free up policy-relevant data from their institutional siloes (Sevigny, 2011; National Research Council, 2010, 2001; Ebener et al., 1993; Haaga & Reuter, 1991), especially where public benefit can be effectively balanced against the risk of exposing sensitive information (Behrman et al., 2011; Arzberger et al., 2004; National Research Council, 2000). Not only are such efforts consistent with current open data initiatives, but they facilitate novel analyses and permit independent scientific assessments of the strengths and weaknesses of key data systems (National Research Council, 2010).

Timeliness and continuity

Timely data is crucial for responding to new and emerging drug problems, and it is equally vital for evaluating current drug policies (Ebener et al., 1993). Collecting and preparing data for public release is time-intensive, and there are justifiable reasons for delaying the release of sensitive data (e.g., to ensure the integrity of law enforcement investigations). However, unreasonable or unexpected delays in data dissemination can impede research and effective policy responses. The ONDCP emphasizes this point in its 2014 *Performance Reporting System Report*: “The more quickly data are published post-collection and available for review, the more actionable and relevant they become” (Office of National Drug Control Policy, 2014b:31).

Delayed reporting has long been a weakness of federal drug data systems (National Research Council, 2001; Ebener et al., 1993). One well-placed observer likened the lack of timeliness of federal drug and crime data to “driving while looking in your

rearview mirror” (Melissa Sickmund, Director of the National Center for Juvenile Justice, as quoted in Krajccek, 2014). In light of this poor record, ONDCP has identified the increased timeliness of federal drug datasets as a key performance objective in its Performance Reporting System (PRS). Unfortunately, data timeliness – operationalized in the PRS as the time lag between year-end and date-of-release for the Treatment Episode Data Set (TEDS) – declined between 2008 (15 months) and 2010 (18 months), with “accelerated progress” required to meet the 2015 performance target of 13 months (Office of National Drug Control Policy, 2014b). The demand for speedy reporting of drug information has spurred the development of “real-time” data systems. For example, the National Poison Data System (NPDS), launched in 2006, monitors human exposures to illicit drugs in near real-time, uploading case information from the nation’s poison control centers several times per hour (e.g., Hoyte et al., 2012). The drawback is that access to the NPDS and similar proprietary data systems is costly.

The utility of drug data systems is also reflected in their maintenance and sustainability, which is essential for tracking drug trends and evaluating long-term policy effects. Federal drug data systems undergo periodic adjustments to improve the validity, reliability, and generalizability of the information collected, which often produces methodological discontinuities and even long gaps in coverage. For example, the termination of the Drug Abuse Warning Network (DAWN) in 2011 has created a multiyear gap in the surveillance of drug-related emergency department visits that will not be closed until its intended replacement system becomes operational (Office of National Drug Control Policy, 2014a). As irksome as methodological discontinuities are to policy analysts, more vexing is the scuttling of useful drug data systems due to the vagaries of congressional funding priorities (Ebener et al., 1993). In this case, the Arrestee Drug Abuse Monitoring (ADAM) program, the nation’s only geographically dispersed survey of drug use among arrestees, became a casualty of federal budgetary cuts in 2013 following a decade of declining fiscal support for the program (Office of National Drug Control Policy, 2014c).

Whatever the cause, even the temporary loss of data systems such as DAWN and ADAM creates gaps in national drug-monitoring capabilities that diminish the ability of policymakers to understand and respond to illicit drug problems. These losses are especially troubling when shortsighted political judgments override scientific merit in determining the fate of key national drug data systems (Kilmer & Caulkins, 2014). To guard against such discontinuities, Ebener, Caulkins, et al. (1993:9) long ago emphasized the prudence of identifying “core systems that deserve maintenance and enhancement for the long-term.” This is a call worthy of periodic revisiting.

Coverage and specificity

Coverage refers to either the target population, geographic units, or drug types captured in particular drug data systems. Coverage of special populations – chronic or intravenous drug users, high school dropouts, the homeless, pregnant women, active-duty military – is typically poor in general population surveys (Haaga & Reuter, 1991).

Because no single data system can adequately cover all target populations, it is useful to view population coverage across the spectrum of available data sources (e.g., Office of National Drug Control Policy, 2003).

Geographic coverage reflects the unit or units of analysis at which a data system collects and reports information, including the national, regional, state, and local levels. Most data systems produce national estimates, but many cannot generate sub-national estimates or are restricted from releasing state- or local-level identifiers, greatly limiting their usefulness to analysts and policymakers. In contrast, many systems report data only for the coterminous United States, select subsets of states, or specific counties or cities, and thus cannot produce nationally representative statistics (Sevigny & Saisana, 2013; Collins & Zawitz, 1990). National-level data systems that allow users to drill down to finer geographic units of analysis are ideal, but obtaining full coverage across all aggregations is rare. For example, the YRBS has collected nationally representative data on drug-related behaviors among high school students biennially since 1991, with the number of participating states producing their own representative data increasing from just 9 in 1991 to 42 in 2013. Although coverage is expanding, state-level participation in the YRBS not only remains incomplete but the panel of states providing representative data varies from year to year.

In the context of drug monitoring, coverage also refers to the array of measured substances, but an equally important consideration is the specificity with which data systems record drug type information (Sevigny & Saisana, 2013; Mounteney et al., 2010). Some data systems only capture generic drug outcomes, as with the caretaker or child drug abuse indicators in the National Child Abuse and Neglect Data System (NCANDS). Similarly, many data systems report highly aggregated drug outcomes that limit their utility for surveillance and policy analysis, such as UCR drug arrest categories (e.g., “heroin or cocaine and their derivatives”). In general, data system usefulness not only increases with broader population, geographic, and drug coverage, but also with finer granularity of the data collected in each of these areas.

In the end, validity and reliability are paramount considerations when evaluating the usefulness of both whole data systems and specific indicators for drug monitoring and policy analysis. As the preceding discussion highlights, however, utility is also a function of other considerations, including data availability and accessibility, timeliness and sustainability, and coverage and specificity. Understanding the quality and utility of existing drug data systems not only highlights their individual strengths and limitations but also informs collective assessments of drug data system coverage gaps.

Developments and Challenges in Drug Problem Measurement

To make informed drug control and management decisions, policymakers require credible information on the nature and scope of illicit drug problems. This section reviews recent developments and ongoing challenges concerning the measurement of drug-related problems, including innovative approaches to drug epidemiology, sizing illicit drug markets, and valuing the societal burden of illicit drugs.

Innovations in drug epidemiology

The limitations of existing data systems, combined with recent advances in scientific methods and information technology, have spurred innovative measurement approaches in drug epidemiology. In the rapidly advancing field of “sewage epidemiology,” for instance, population levels of illicit drug use are estimated from excreted drug biomarkers detected in wastewater and sludge (Pal, Megharaj, Kirkbride, & Naidu, 2013; Daughton, 2001). Beyond the technical hurdles of reliably back-calculating population drug consumption from biomarker excretion, environmental degradation, and wastewater flow rates, sewage epidemiology has inherent limitations because it cannot provide insight into specific user demographics or how consumption may change with purity. Still, wastewater analysis has a number of potential advantages over traditional drug-monitoring programs, including greater objectivity in measurement and the ability to produce near real-time data at short intervals for small geographic units (Bruno et al., 2014; Hall et al., 2012; van Nuijs et al., 2011). Large-scale sewage epidemiology programs have been rolled out in Europe (e.g., Ort et al., 2014; Thomas et al., 2012), but implementation in the United States has been more limited and controversial (e.g., Subedi & Kannan, 2014; Banta-Green et al., 2009; Bohannon, 2007). Although the cost–benefit of wider deployment is uncertain, sewage epidemiology holds particular promise for identifying emerging drug trends, cross-validating survey-based consumption measures, and evaluating the real-time effects of local policy interventions (van Nuijs et al., 2011).

Other innovative surveillance approaches are taking advantage of the Internet and social media content (Stoové & Pedrana, 2014; Eysenbach, 2009). The demonstrated capabilities of this type of “infodemiology” include Internet tracking of the availability of novel and emerging psychoactive substances (Curtis et al., 2015; Bruno, Poesiat, & Matthews, 2013; Deluca et al., 2012), monitoring drug-use trends, patterns, and attitudes through posted social media content (Cavazos-Rehg, Krauss, Gruzza, & Bierut, 2014; Cameron et al., 2013; Hanson et al., 2013), and analyzing illicit drug market data collected from anonymous online exchanges (e.g., StreetRx, Silk Road) (Christin, 2013; Dasgupta et al., 2013). Although Internet and social media content is both technically challenging to collect and subject to serious coverage and measurement errors, ongoing advances in information epidemiology demonstrate the potential of using electronic media to produce timely, geolocated data on illicit drugs that complement existing data sources.

Sizing illicit drug markets

Having some perspective on the size of illicit drug markets is essential for evaluating the impact of drug control policies. As Kilmer et al. (2011:153) note, “knowing whether a country consumes tens, hundreds, or thousands of metric tons (MT) of a prohibited substance is critical for understanding the impact of a 5 MT seizure at a border crossing.” Given the difficulty of studying underground economies, however,

there are no “incontestable figures” measuring the size of illicit drug markets, whether global, national, or local in scope (Thoumi, 2005). Data limitations force even the most meticulously constructed estimates to rely on a host of indirect measures and fragile assumptions, producing highly uncertain, and potentially biased, market size figures (Office of National Drug Control Policy, 2014d; United Nations Office on Drugs and Crime, 2014; Crawford, 2014; Office of National Drug Control Policy, 2012b; Leoncini & Rentocchini, 2012; see, e.g., Bouchard, 2008). For certain drugs and indicators, confidently estimating anything more than general market trends stretches the data beyond current capabilities (Caulkins, Kilmer, Reuter, & Midgette, 2014; Reuter & Greenfield, 2001).

Kilmer et al. (2011) describe four basic economic approaches to sizing illicit drug markets. On the supply side, production-based estimates of source-country availability are derived from data on cultivated land area and plant/laboratory yields, whereas seizure-based estimates of domestic availability are constructed by dividing annual seizure amounts by an assumed seizure rate. On the demand side, consumption-based estimates of quantity consumed multiply estimates of prevalence by typical user amounts and frequencies, whereas expenditure-based estimates of consumption are the product of prevalence and average drug purchase quantities and prices. Because each approach has its limitations, assessing concordance across different estimates is advisable. For example, production- and consumption-based estimates of US cocaine availability for 2006 were remarkably consistent for the lower bound of the market (i.e., 208 MT) but widely divergent for the upper bound (i.e., 312 vs. 494 MT) (Office of National Drug Control Policy, 2014d, 2012b).

Given these uncertainties, investigators have proposed various methods for improving market estimation methods. For marijuana, demand-side estimates could benefit greatly from the addition of questions on patterns of marijuana consumption to the NSDUH (Office of National Drug Control Policy, 2014d). However, for other drugs such as heroin, cocaine, and methamphetamine that are not well covered in general population surveys or for which underreporting may be an issue, improving demand-side estimates will likely require alternative sampling methods (e.g., respondent-driven sampling) and/or supplementary data from special populations (e.g., arrestees, emergency department patients, treatment clients) (Caulkins, Sussell, Kilmer, & Kasunic, 2015; Office of National Drug Control Policy, 2014d; Crawford, 2014). Unfortunately, recent data system losses (i.e., ADAM, DAWN) severely limit the latter possibility.

Scholars are generally less sanguine about the prospects of improving supply-side market estimates, primarily because many of the necessary parameters (e.g., cultivation areas, seizure rates) require strong assumptions or are based on classified, and hence unverifiable, data sources (Kilmer et al., 2011; Reuter & Greenfield, 2001). Nevertheless, several recent studies highlight promising alternative approaches. For instance, Leoncini and Rentocchini (2012) used open-source data on seized processing laboratories to estimate the size of the Colombian cocaine market, and Bouchard (2008, 2007) demonstrated the feasibility of using a capture-recapture model of arrested growers to estimate the scale of domestic marijuana production.

Finally, whether operating from a supply- or demand-side perspective, studies have only recently begun leveraging data on overlapping illicit, medical, and legal marijuana markets to generate (segmented) market size estimates (Light, Orens, Lewandowski, & Pickton, 2014; Crawford, 2014; Kilmer et al., 2013). Ultimately, future refinements in sizing illicit drug markets, including how they intersect with legal/gray markets, will require better data and improved modeling.

Valuing the societal burden of illicit drugs

Studies that value the societal impact of illicit drugs facilitate comparison with other social ills, fostering public debate over the prioritization of government policies and programs (Larg & Moss, 2011). The “cost of illness” (COI) framework has been the predominant approach to estimating the economic burden of illicit drugs in the United States (Caulkins, Kasunic, Kleiman, & Lee, 2014; National Drug Intelligence Center, 2011; Office of National Drug Control Policy, 2004; Harwood, Napolitano, Kristiansen, & Collins, 1984). Although governed by a complex methodology, COI studies follow three basic steps: identifying which consequences to measure, determining the magnitude of the consequences, and calculating the associated unit costs (MacCoun & Reuter, 2001). Using this method, the National Drug Intelligence Center (2011) estimated the total costs of illicit drug use in the United States in 2007 at \$193,096,930,000 – a remarkably precise figure, reported without bounds, that fails to acknowledge the uncertainties propagated through each stage of the analysis. Understanding the genesis of these numbers, therefore, is crucial to assessing their policy relevance.

The fundamental theoretical issue confronting COI studies concerns which social costs to measure. From the concrete to the abstract, costs may be direct, indirect, or intangible. Direct costs represent resources used to combat drugs and their effects (e.g., medical care), indirect costs are the ancillary or follow-on effects of drug use (e.g., disability), and intangible costs are nonpecuniary human harms linked to drug use (e.g., pain and suffering). Although COI analysts endeavor to measure a comprehensive array of drug-related healthcare, productivity, criminal justice, and crime costs, data and methodological limitations invariably yield an incomplete accounting that is biased toward harms “easily measurable in dollars and cents” (Kleiman, 1999:639). For example, COI studies of drug abuse commonly omit the costs of violence and corruption generated by the drug trade (Moore & Caulkins, 2006), and most ignore hard-to-measure intangible costs (e.g., harm to families) that are potentially quite sizable (Melberg et al., 2011; Kleiman, 1999). Thus, to the extent that intangibles and other unmeasured costs reflect meaningful losses, their omission will produce estimated economic impacts that are both undervalued and skewed toward more readily available cost indicators (Melberg, 2010). Arguments for considering of a broader array of cost components are therefore appealing.

COI methods also face considerable challenges in quantifying the magnitude and unit costs of illicit drug consequences. First, as we have seen with national estimates of the number of drug-specific overdose deaths, the underlying data can

be incomplete and unreliable (Warner et al., 2013; Webster & Dasgupta, 2011). Compounding such data limitations, different statistical methods for valuing drug-related morbidity and mortality can produce widely divergent results (Nicosia, Pacula, Kilmer, Lundberg, & Chiesa, 2009; Viscusi & Aldy, 2003). Moreover, because drugs are not the sole risk factor for many related social harms (e.g., HIV infection), “drug attribution factors” (DAFs) must be calculated to apportion a share of these harms to drug-related activity. Unfortunately, the epidemiological evidence and methods used to compute DAFs suffer from a number of serious flaws. For instance, estimates of the amount of drug-attributable crime rely on narrow definitions that omit many relevant drug-crime factors (e.g., systemic crime, addiction), draw inferences from highly selected samples of inmates rather than less biased intake cohorts or arrestee samples, and fail to control for competing risk factors for drug and crime involvement (Caulkins & Kleiman, 2014; Office of National Drug Control Policy, 2013; Stevens, 2008; Moore & Caulkins, 2006; Cohen, 1999).

An alternative approach to value the harms of illicit drugs uses the “burden of disease” framework to produce population-level health indices such as the quality-adjusted life year (QALY) and disability-adjusted life year (DALY) (Gold, Stevenson, & Fryback, 2002). DALYs, which are more commonly used in aggregate studies of disease burden, sum condition-specific estimates of years of life lost (YLL) due to premature death and years lived with disability (YLD) weighted by the disability’s severity (Murray & Lopez, 2013). In 2010, out of 272 diseases and conditions assessed in the United States, drug use disorders ranked 10th in the number of DALYs – on par with health losses due to road injuries and Alzheimer’s disease (US Burden of Disease Collaborators, 2013). One advantage of DALYs and related health indices is that they avoid the monetization problem inherent in COI studies, but a key disadvantage is that they measure fewer drug-related social and public safety harms due to gaps in the epidemiological evidence for many risk factors (e.g., drug-related crime) and methodological challenges in combining incommensurate metrics of harm (Degenhardt & Hall, 2012).

Monitoring and Assessing Drug Policy Outcomes

The push for accountability in national drug control policies and programs is strong. Comprehensive and systematic feedback on drug policy performance is therefore integral to policymakers and practitioners as they respond to illicit drug problems. This section examines several policy evaluation tools designed to aid timely and effective drug policy decision-making.

Performance measurement

Performance measurement is the ongoing monitoring and assessment of policy or program achievements as benchmarked against a set of predefined performance standards. As the lead federal agency on drug policy, ONDCP established its current

PRS to track progress toward specific goals and objectives articulated in *The National Drug Control Strategy*. In particular, the PRS assesses national policy and program accomplishments across 32 performance measures (e.g., reduce drug-induced deaths by 15%) in seven policy areas: prevention, treatment, public health, crime, domestic enforcement, international partnerships, and data system quality (Office of National Drug Control Policy, 2012a). The most recent PRS report charts intermediate progress on each measure from an established baseline to a 2015 performance target, with progress-to-date reported as being on track for 15 of the 32 performance measures (Office of National Drug Control Policy, 2014b). More than a report card, however, the PRS is designed to inform federal policymaking, planning, and resource allocation. For example, if insufficient progress has been made toward a performance target in consecutive years, ONDCP will initiate an interagency review to assess and implement corrective action. The PRS is designed to be both comprehensive and adaptable to changing conditions, but with metrics that are consistently two or more years out of date and dozens of federal agencies involved, it will be several years before a final judgment can be made regarding the effectiveness of the current PRS in guiding national drug control efforts toward 2015 performance targets.

Sentinel surveillance

In the public health field, sentinel surveillance entails real-time monitoring of diseases and other conditions from multiple data streams for early problem detection and dissemination to professionals in the field (Foldy et al., 2004). This model is being increasingly adopted in the drug abuse field, where it is best established for prescription drug abuse monitoring. There are two proprietary surveillance systems that regularly collect and monitor multifaceted data on prescription drug misuse, abuse, and diversion.¹ The Researched Abuse, Diversion and Addiction-Related Surveillance (RADARS) System collects information from poison center reports, user-submitted street price reports, and regular surveys of drug diversion investigators, methadone patients, college students, healthcare workers, and other key informants (Cicero et al., 2007). The National Addictions Vigilance Intervention and Prevention Program (NAVIPPRO) collects data from clinical assessments of adults and adolescents entering substance abuse treatment, electronic media (e.g., Internet forums and chat rooms), and other nonproprietary sources (e.g., the FDA Adverse Events Reporting System) (Butler et al., 2008).

The great advantage of RADARS and NAVIPPRO is that they are capable of producing timely, geolocated, and product-specific reports on prescription drug abuse trends and patterns for dissemination to stakeholders (e.g., government agencies, pharmaceutical companies). Not only does this information facilitate speedier and more effective public health responses, but it encourages safer prescribing and dispensing practices, especially for newly approved drugs and formulations with measurable or suspected abuse potential (Sembower, Ertischek, Buchholtz,

Dasgupta, & Schnoll, 2013; Butler, Black, Cassidy, Dailey, & Budman, 2011). There are several downsides, however. First, access to these data systems and their products is restricted to affiliated investigators and system subscribers, limiting their broader policy utility. Second, although RADARS and NAVIPPRO rely on data with broad geographic coverage, they are not nationally representative. Lastly, neither system monitors traditional drugs of abuse or emerging psychoactive substances. Fortunately, sentinel surveillance and other dashboard-type monitoring systems for illicit drugs are currently being developed with federal support (e.g., Center for Substance Abuse Research, 2014; Office of National Drug Control Policy, 2013). If successfully implemented, these new programs will enhance the nation's drug problem detection and response capabilities.

Drug harm rankings

Risk assessments are used to assess the relative abuse liability and harm potential of psychoactive substances in order to inform differential control policies (Gable, 2004; Kalant, 1999). In recent years, research efforts in various countries have sought to develop comprehensive scales that systematically rank psychoactive substances by their harmfulness in order to evaluate and aid drug scheduling decisions (Morgan, Muetzelfeldt, Muetzelfeldt, Nutt, & Curran, 2010; Nutt, King, & Phillips, 2010; van Amsterdam, Opperhuizen, Koeterb, & van den Brink, 2010; Nutt, King, Saulsbury, & Blakemore, 2007; Gable, 2006). In the United Kingdom, for instance, Nutt et al. (2010) used the Delphi method and a "swing weighting" approach to generate relative harm scores for 20 different psychoactive substances across 16 dimensions of physical, psychological, and social harm to both self and others. The general conclusion of this and related work in different national contexts is that there is considerable incongruity between the relative harms of psychoactive substances and their legal status or classification.

Despite their intuitive appeal, drug harm rankings have been the subject of considerable debate over whether they actually provide a rational basis for informing drug classification decisions (Caulkins, Reuter, & Coulson, 2011a; Fischer & Kendall, 2011; Rolles & Measham, 2011; Room, 2011; Cohen, 2010). Foremost among these criticisms is the use of a single scalar metric to represent a complex multidimensional construct. Contexts vary, subgroup effects differ, and a drug's harmfulness may not correspond with its aggregate social harm – factors that drug harm rankings ignore according to the critics (Caulkins et al., 2011a; Rolles & Measham, 2011; Cohen, 2010). As a counterpoint to these objections, proponents note that scientific drug harm rankings, despite their flaws, expose inconsistent drug classification schemes developed decades ago under highly politicized conditions (Fischer & Kendall, 2011; Room, 2011).

In light of this debate, a number of suggestions have been posited for improving the policy relevance of drug harm rankings. One is to focus on a matrix of underlying drug harm indicators rather than summary ratings that obscure this

multidimensionality. Another is to conceptualize the matrix of harms dynamically under different policy conditions rather than statically under the status quo legal framework (Caulkins et al., 2011a; Fischer & Kendall, 2011). Although the question of whether drug harm rankings provide a rational basis for informing drug scheduling decisions remains unsettled, the surrounding debate highlights important conceptual and technical considerations in future applications of drug risk assessment to policy design (Caulkins, Reuter, & Coulson, 2011b; Nutt, 2011).

Composite indicators

Whereas drugs are the unit of analysis in harm rankings, a composite indicator (CI) is a statistical aggregation of social indicators into a single numerical index measured across jurisdictions or time. CIs serve useful benchmarking, evaluation, and public communication functions, and have been developed to measure complex social phenomena in the domains of business and trade, environmental sustainability, quality of life, governance, and, increasingly, drug policy (Ritter, 2009; Bandura, 2008; Organisation for Economic Co-operation and Development, 2008). Ritter (2009:475) has argued that “drug policy analysis would be substantially enhanced if we could develop an Index that can provide a summative measure of the impact of drug use and associated harms.”

One common application of CIs in the drug field is facilitating cross-jurisdictional comparisons of drug-related harms. For example, the United Nations Illicit Drug Index (IDI) compared the scale of global drug problems for world subregions by aggregating internationally available indicators on drug production, trafficking, and abuse (UNODC, 2005). In the United States, McAuliffe and colleagues constructed a Drug Need Index (DNI) based on drug-related mortality, arrest, and treatment admission indicators in order to measure interstate variations in unmet need for drug treatment (McAuliffe & Dunn, 2004; McAuliffe, LaBrie, Woodworth, Zhang, & Dunn, 2003; McAuliffe, LaBrie, Lomuto, Betjemann, & Fournier, 1999). More recently, Sevigny and Saisana (2013) created a series of US Drug Consequences Indices (DCIs) measuring interstate variations in the harmful consequences of heroin, methamphetamine, cocaine, and marijuana for the period 2000 to 2009. In this work, each drug-specific index was informed by more than a dozen indicators across health, social and economic, and crime and disorder domains.

CIs have also been used to monitor national drug policy outcomes over time. For example, the UK Drug Harm Index (UK-DHI), developed to monitor progress toward UK Drug Strategy objectives, aggregated indicators across the domains of health, community disorder, and crime (Home Office, 2009; MacDonald, Tinsley, Collingwood, Jamieson, & Pudney, 2005). Sevigny and Saisana (2013) have produced an analogous US time series index of drug-related consequences. CIs have also been used to estimate the cost-savings of specific drug policy interventions. For example, both the Australian Federal Police Drug Harm Index (AFP-DHI) (McFadden, 2006) and the New Zealand Drug Harm Index (NZ-DHI) (Slack et al., 2008) combined

COI valuations with estimates of harm per kilogram of drug to produce an index of drug-related costs averted per kilogram of drug seized.

Despite an ability to parsimoniously summarize complex social phenomena, CIs confront daunting conceptual and methodological challenges in aggregating incommensurate drug indicators into a single metric. If their construction is technically unsound, CIs can engender poor buy-in from stakeholders and produce simplistic or misleading policy prescriptions (Ritter, 2009, 2007; Saltelli, 2007). Thus, broader acceptance of CIs as a policy tool requires that they be transparent and rigorous in their construction, but also that they be updated regularly and disseminated to stakeholders in a timely manner (Sevigny & Saisana, 2013).

Design Considerations for Drug Policy Decision-Making

Measuring drug policy

The coding of laws and policies is a necessary precondition to quantitative evaluation research that seeks to assess the impacts of policy inputs on social and behavioral outcomes (Chriqui, O'Connor, & Chaloupka, 2011; Burris & Anderson, 2010). Understanding and coding how laws vary across both context and time can be challenging. The task of “turning laws into numbers,” therefore, presents a critical measurement challenge that is best tackled by multidisciplinary teams of social scientists and legal scholars (Burris & Anderson, 2010). There are a number of examples of such efforts to measure public policy and develop legal datasets (e.g., Pacula, Powell, Heaton, & Sevigny, 2015; Erickson et al., 2014; Presley & Burris, 2014; Drabble, Thomas, O'Connor, & Roberts, 2014; Costich, 2012; Wagenaar, Harwood, Silianoff, & Toomey, 2005).

Tremper, Thomas, and Wagenaar (2010) identify key design considerations when coding public policies for evaluation research. First, investigators must decide when to code the law's starting point. For example, research on the effects of medical marijuana laws has used either (i) the enactment date to investigate hypothesized anticipatory effects or (ii) the effective date to study post-implementation effects (Pacula et al., 2015; Anderson, Hansen, & Rees, 2013). Policy implementation can also be delayed – a common occurrence with the roll-out of medical marijuana dispensaries in many states – so investigators have keyed on “operational dates” to examine actual on-the-ground policy effects (Sevigny, Pacula, & Heaton, 2014). When analyzing policy, researchers need to be aware of the implications of using alternative policy start dates (Tremper et al., 2010).

A related concern is the time resolution at which policies are coded. Annualized policy datasets are subject to measurement error to the extent the law's start date occurs after the anchor date for coding purposes. For example, Rhode Island's medical marijuana law became effective January 3, 2006; if the coding protocol was anchored on January 1 of each year, then the law would have been in effect for nearly the entire calendar year before “turning on” on January 1, 2007. Potential solutions

include increasing the time resolution (e.g., months) or coding the proportion of the initial year that the policy was effective.

A second key design consideration concerns the heterogeneity of coded laws and policies. The common practice of using a single binary indicator to code the presence or absence of a law can obscure important legal nuances across jurisdictions. Indeed, the inadequate accounting of policy heterogeneity in existing research on medical marijuana laws partly explains the inconsistent findings observed in this literature (Pacula et al., 2015). This policy heterogeneity could be captured by multiple binary indicators coding specific legal provisions, constructed ordinal or interval-level policy measures, or policy indices that measure policy strength (Sevigny et al., 2014; Tremper et al., 2010; Brand, Saisana, Rynn, Pennoni, & Lowenfels, 2007). Another consideration is whether legislative, administrative, and/or case law will be used to code legal variables. Keying only on laws will often miss critical implementation delays. For example, Montana passed a major reform of its medical marijuana law in 2010, but certain provisions were stayed through legal injunction. Without knowledge of the case law, an analyst would erroneously conclude that the law was fully in effect as of the legislative effective date. The key lesson here is that legal and policy variables require as much attention in conceptualization and operationalization as outcome measures.

Credible drug policy analysis

Scientific evidence is a critical element in the design and implementation of rational drug control policies. True experiments in which subjects are randomly assigned to treatment or control groups are considered the “gold standard” for assessing the causal effects of policies and interventions (e.g., Grommon, Cox, Davidson, & Bynum, 2013). However, when random assignment is not feasible due to political, ethical, or cost constraints, researchers often turn to quasi-experiments in which group assignment is determined naturally or by some other nonrandom process. Examples of quasi-experimental designs applied to questions of drug policy include differences-in-differences (Pacula et al., 2015), regression discontinuity (Yörük & Yörük, 2013), interrupted time series (Cunningham, Liu, & Callaghan, 2013), propensity score (Evans, Li, Urada, & Anglin, 2014), and synthetic control designs (Saunders, Lundberg, Braga, Ridgeway, & Miles, 2014). Nonexperimental methods such as historical analysis, ethnography, focus groups, and cross-sectional survey research also play an important role in drug policy assessment by providing context, highlighting program processes, and confirming or refuting experimental evidence (Babor et al., 2010).

Multimethod approaches, whether applied within or across studies, are also highly beneficial in policy research, especially when the strengths of one design counterbalance the limitations of another. Along with triangulation of methods, drug policy research has greater value when it assesses the full range of theoretically relevant outcomes, including potential unintended consequences (Mears, 2010). For example, most drug court evaluations focus primarily on recidivism but neglect drug use, prosocial functioning, and incarceration outcomes, which limits the ability

to draw broad-based policy conclusions on drug court effectiveness (Mitchell, Wilson, Eggers, & MacKenzie, 2012).

Meta-analysis is a statistical method for synthesizing policy or program effects across many studies that has been instrumental in identifying and promulgating evidence-based drug policies (Ritter, Bammer, Hamilton, Mazerolle, & The DPMP Team, 2007). However, since a single average effect size rarely provides actionable input to policymakers, Ringquist (2013) argues that meta-regression should be the primary meta-analytic method in policy studies. Meta-regression uses study-level moderators within a regression framework to understand how variations in study design, program interventions, and target populations affect the outcome of interest. Understanding this heterogeneity is vital for providing useful policy guidance in diverse contexts and among dissimilar groups (Pearson & Coomber, 2009).

Policymakers also seek *ex ante* decision support. Ritter et al. (2007) identify a number of modeling approaches for drug policy decision-making, including agent-based modeling, system dynamics modeling, and cost-effectiveness studies. Agent-based modeling simulates the behavior and outcomes (e.g., drug use, mortality) of individual actors within a local system (e.g., users, dealers) in response to changes in policies, practices, and other social conditions (e.g., enforcement effort, treatment availability, drug purity) (e.g., Hoffer, Bobashev, & Morris, 2009; Dray, Mazerolle, Perez, & Ritter, 2008; Agar & Wilson, 2002). In contrast, system dynamics adopts a top-down approach to modeling behaviors based on simulated stocks and flows (Luke & Stamatakis, 2012). For example, Bhati and Roman (2010) modeled the flow of drug-involved offenders into the criminal justice system using a synthetic dataset and estimated that greatly expanding the treatment of offenders could avert millions of crimes annually. Lastly, cost-effectiveness research provides decision support based on the relative costs and benefits of different policy options (e.g., Drake, Aos, & Miller, 2009).

Whatever the analytic approach, responsible drug policy analysis requires explicit reporting of the underlying assumptions and associated uncertainties. Manski (2011) refers to research where uncertainty is not reflected in point estimates and policy prescriptions as “policy analysis with incredible certitude,” a practice that he argues is detrimental to effective policy choice. It must also be recognized that drug policy is not driven solely by effectiveness criteria. No matter how sound the data and research design, cultural norms, moral values, politics, and other social forces also influence drug policy (Ritter et al., 2007). Nevertheless, as Babor et al. (2010:259) conclude, scientific evidence “could be a powerful ally of leaders who have the courage, creativity, and conviction to create more effective drug policy.”

Note

- 1 A third, the Prescription Behavior Surveillance System (PBSS), is currently being developed with federal support by Brandeis University's Prescription Drug Monitoring Program Center of Excellence. When operational, the PBSS will use data from participating state prescription drug monitoring programs (PDMPs) to measure prescription drug prescribing and dispensing patterns in order to detect misuse, abuse, and diversion.

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Part V

What We Know and Do Not Know about Drugs and Public Health and Safety

What Has Been Learned from Research on the Drugs–Crime Connection?

Trevor Bennett and Jason Edwards

Introduction

The term the “drugs–crime connection” refers to the relationship between drug misuse and criminal behavior. It is used by governments in their strategy documents to suggest that drug use and crime are linked in some way. There are several ways in which drug use and criminal behavior might be connected. Drug use might cause crime, for example, when drug users seek illegal funds to pay for their drug use. Crime might cause drug use when surplus funds from crime are used to purchase drugs. Drug use and criminal behavior might both be caused by a third variable. This might be a common individual or social characteristic (poor parenting) or a cluster of variables that affect both drug use and crime (e.g., poverty and homelessness). Finally, drugs and crime might not be causally linked at all. Certain kinds of deviant behavior might simply co-exist among individuals or groups.

It is unlikely that all kinds of drugs and all kinds of crimes are connected. Drug use covers a wide range of drugs from aspirin to heroin. Criminal behavior covers a wide range of crimes from tax evasion to homicide. In practice, drugs and crime research tends to be limited to just a few types of drugs and crime. The most common drugs investigated in the research on the drugs–crime connection are heroin, crack, and cocaine and the most common offenses are burglary, theft, drug supply, and robbery.

The current chapter investigates the nature of the drugs–crime connection by summarizing the research evidence on the relationship between use of drugs and the commission of crime. It also examines the validity of some of the theories explaining the connection. The evaluation will be divided into four sections: the first will consider what has been learned about the drug–crime connection from

studies of drug users and offenders; the second will examine the relationship between specific types of offenses and specific types of crimes; the third will look at variations in the drugs–crime connection by selected demographic characteristics; and the fourth section will examine evidence on the causal connection between drug use and crime.

Relationships Between Drug Use and Crime

The relationship between drug use and crime has been investigated mainly by determining the proportion of drug users who offend and the proportion of offenders who are involved in drug misuse.

Surveys of drug users

Best et al. (2001) conducted a study that investigated the criminal behavior and drug use of 100 new entrants to a drug treatment service in London. The results showed that the rate of offending was significantly higher among crack users than nonusers. The total number of acquisitive crimes committed in the last month was 41 among crack users compared with 13 among nonusers. The amount of illegal income derived from shoplifting was also significantly higher among crack users (£777) than nonusers (£229).

Studies based on users in treatment tend to find that drug users are more likely than comparable samples of nonusers to commit crimes. Hunt et al. (1984) conducted interviews with 368 methadone maintenance clients and 142 narcotics users not in treatment in the United States. The results showed that heroin users were more likely than nonusers to report having committed property crimes and drug-dealing crimes in the last week (or the last two weeks for the methadone sample). In a study of adolescent drug users admitted to therapeutic community drug treatment programs in the United States, Hawke et al. (2000) found that amphetamine users were significantly more likely than nonusers to have committed property crimes and drug-supply offenses at some point in their lives. Amphetamine users were also more likely than nonusers to have engaged in prostitution offenses. Kokkevi et al. (1993) found, in a study of drug users in Greece, that arrest and conviction rates were higher among drug users than among a control sample of nonusers. Two-thirds of the drug users reported two or more previous arrests, compared with 15% of the control group of nonusers.

Studies based on users in the community also tend to show that drug users are more likely than nonusers to commit crimes. Nurco et al. (1993) compared changes in the severity of criminal behavior among three groups: one group of narcotic addicts, one control group who had never been addicted, selected from peers of the addicts, and one group who had never been addicted drawn from the community at large. The narcotic addicts were more likely to report involvement in crime at

ages 12–14 than the non-addict peer group and the non-addict control group. In total, 74% of the narcotic addicts, compared with 50% of the non-addicted peers and 31% of the non-addict controls, reported involvement in crime.

Turpeinen (2001) used a sample of 119 drug-experimenting school children in Finland to explore the association between intravenous drug use and offending behavior later in life. Subjects who had used opiates intravenously in adolescence were compared with subjects who had not injected opiates. The results showed that subjects who had used opiates intravenously were significantly more likely than those who had not to have been in prison in the 20-year follow-up period. The same was also true for subjects who had used amphetamines intravenously during adolescence.

Surveys of offenders

The relationship between involvement in drug use and crime can also be determined by looking at samples of offenders in the general population or samples of arrested or convicted offenders. Goulden and Sondhi (2001) conducted a study of young people in the general population as part of the second wave (1998/1999) of the Youth Lifestyles Survey. The sample comprised 4,848 young people aged 12 to 30 living in England and Wales. The study showed that significantly more offenders than non-offenders in the general population had used drugs in the last year. Approximately half of the offenders reported using an illicit drug in the last year compared with one-in-seven non-offenders. The authors concluded, “The differences in prevalence rates between the offender populations and non-offenders were strongly statistically significant and there was a clear relationship between rate and type of offending and drug use” (Goulden and Sondhi, 2001: 18).

Potterat et al. (1998) explored the prevalence of illegal drug use among 237 prostitutes and 407 comparison women. Drug use was more commonly reported by prostitutes than comparisons (86% versus 23%). Kuhns et al. (1992) looked at the prevalence of illegal drug use among 53 female prostitutes and 47 female arrestees (who were not prostitutes). The results showed that significantly more prostitutes had tried drugs, had used drug with greater frequency, and had begun drug/alcohol use at younger ages. A similar study by Yacoubian et al. (2001) compared 182 female arrestees charged with prostitution offenses to over 3,000 female arrestees charged with other non-prostitution offenses. Seventy-eight percent of prostitutes tested positive for at least one drug, compared with 51% of non-prostitutes (the difference was statistically significant).

In a study in Spain, Morentin et al. (1998) conducted interviews with 578 police detainees. Just over half of the subjects were diagnosed as having heroin dependence. Heroin-dependent subjects had a significantly higher mean offense rate (1.8 offenses compared with 1.1) than nonusers. Heroin users committed more burglary offenses (1.1 compared with 0.2) and more robbery offenses (0.2 compared with 0.1).

Hser et al. (1998) explored drug use and correlates among sexually transmitted disease patients, emergency room patients, and arrestees in the United States.

Eighty-three percent of subjects in the jail sample had used any drug in their lifetime, compared with 63% of those in the emergency room group, and 67% of those in the sexually transmitted disease patient group.

Reviews of the literature

It is not possible to assess the results of the entire body of research on the drugs–crime connection by looking at a small number of selected studies. An alternative approach is to look at the results of systematic reviews of the literature. As far as we know, there have only been two previous systematic reviews of the literature on the relationship between drug use and crime: one by Derzon and Lipsey (1999) on the relationship between marijuana use and juvenile delinquency and the other by Bennett, Holloway, and Farrington (2008) on the relationship between illicit drug use and property crime.

The review by Derzon and Lipsey (1999) used meta-analytic techniques to summarize the findings of research on the relationship between marijuana use and various problem behaviors, including delinquency. The review was based on 63 reports summarizing 30 independent studies. The research found a positive and significant correlation between marijuana use and various measures of delinquency, including aggressive behavior, property offending, and crimes against the person. However, the authors concluded that the strength of the relationship was not large, with the majority of the mean correlations being less than 0.3.

The review by Bennett, Holloway, and Farrington (2008) included a meta-analysis of the results of 30 studies that presented findings on the relationship between measures of drug use and measures of crime. The results showed that the odds of offending were about three to four times greater for drug users than nondrug users. Overall, the authors concluded that the research showed a connection between drug use and crime. However, the relationship varied widely depending on the kinds of drug use and kinds of crime measured.

The research is almost unanimous in its finding that drug users are more likely than nondrug users to be criminals and that criminals are more likely than non-criminals to be drug users. However, this research is based almost wholly on the proportions of one group found in the other group. In order to understand the relationship more fully it is necessary to know more about the details of the connections.

Relationships Between Specific Drug Use and Specific Crimes

There are a number of studies that have used disaggregated measures to investigate variations in the drugs–crime connection across drug types and across crimes.

In a study conducted in the United States, Johnson et al. (1994) conducted interviews with more than 1,000 drug abusers. The authors found some differences between the user types. Crack users were found to be more likely than nondrug

users to have committed shoplifting (21% compared with 9%) and handling offenses (20% compared with 5%) in the last year. Cocaine users were no more likely than nondrug users to report shoplifting offenses (10% compared with 9%).

A study of arrestees in Australia examined the relationship between being charged with particular offenses and testing positive for one of six drug types (Makkai, 2001). The results showed some variation in the relationship depending on drug type and crime type. Overall, arrestees who tested positive for opiates were 4.2 times more likely to be charged with a property offense than those who tested negative for opiates. Arrestees testing positive for cocaine (including crack) were 2.4 times more likely to be charged with a violent offense.

Some studies that have used disaggregated measures have investigated the relationship between drug misuse and the rate of offending. Johnston et al. (1978) used data from a national longitudinal high-school survey conducted in the United States to correlate rates of use of seven drug types with rates of 15 types of criminal behavior. The results showed that virtually all drug measures correlated positively with measures of property crime. However, the relationship was strongest for minor theft, shoplifting, and trespassing. The drugs most strongly predictive of interpersonal violence were heroin, barbiturates, amphetamines, and cocaine. The drug least strongly associated with rates of criminal behavior, in relation to almost all delinquency items, was marijuana.

Bennett and Holloway (2005) found that users of the “hard” drugs such as heroin and crack were significantly more likely than other drug users to report committing certain kinds of offenses. Heroin users were almost five times more likely to report shoplifting than nonusers. Strong associations were also found in relation to crack and robbery and crack and drug-supply offenses. The association between recreational drug use and crime was weaker, but not nonexistent. Cannabis users were almost three times as likely to report drug-supply offenses as nonusers and twice as likely to report non-residential burglary.

Bennett, Holloway, and Farrington (2008) investigated the relationship between drug use and criminal behavior by conducting a systematic review of the literature comprising 30 studies. Six studies examined the relationship between crack use and property crime and found that the odds of offending are about 6 times greater for crack users than non-crack users. Fourteen studies investigated the connection between opiate use (mainly heroin) and acquisitive crime. It was concluded that heroin use and crime were positively associated and that the odds of offending are about 3.0 to 3.5 times greater for heroin users than non-heroin users. A similar comparison for cocaine users showed that they were 2.5 times more likely to offend than non-cocaine users. Hence, comparing the mean effect sizes for the three drug types shows that the odds of offending are highest among crack users, second highest among heroin users, and lowest among cocaine users. The study also investigated selected recreational drugs and their connections with crime. The odds of marijuana users offending were 1.5 times higher than the odds of non-marijuana users offending. Six studies investigated the relationship between amphetamine use and crime. The results showed that amphetamine users were 1.9 times more likely than non-amphetamine users to offend.

These findings are important because they show a clear difference in the strength of the drugs–crime connection across different drug types.

A more rigorous way of determining the connection between drug type and criminal behavior is to investigate the relationship over time. Longitudinal designs have the advantage over cross-sectional design in determining causal order. A study conducted in Australia investigated the effect of the heroin drought beginning in early 2001 on drug of choice and acquisitive crime (Degenhardt et al. 2005). The short-term effect was an increase in the price of heroin which was associated with an increase in break-and-enter offenses. This was followed by drug switching from heroin to crack which was linked to a reduction in break-and-enter offenses and an increase in robbery offenses. A similar association was found in research conducted by Baumer et al. (1998) in the United States. The study analyzed the crime rates for 142 cities in the late 1980s during a time when US robbery rates were increasing and burglary rates were decreasing. The research found that cities with higher levels of crack use experienced larger increases in robbery and larger decreases in burglary. The authors concluded that the emergence and proliferation of crack shifted the balance of offending opportunities and rewards away from burglary toward robbery.

Ball et al. (1981) examined changes in drug use and crime among a sample of 243 opiate addicts drawn from police files in the United States. All subjects had one or more addiction periods, with the average length of an addiction period of two years. The results showed that there were substantially more mean crime-days during periods of addiction than during periods of abstinence (248 days per year compared with 40.8 days per year). They concluded that, “criminality decreased markedly during the months or years that these addicts were not dependent on heroin and other opiates” (Ball et al., 1981: 60).

These studies are useful in showing that changes in drug-use patterns can in turn cause changes in crime patterns. However, they also highlight the complexities of the processes involved, including the extent to which changes in demand stimulate changes in price (and the amount of a particular crime) or drug switching (and the amount of a different crime).

Variations by Individual Characteristics

There have been few studies that have investigated variations in the drug–crime connection by demographic characteristics. Most attention that has been paid to this topic has focused on variations by gender and ethnicity.

Gender and the drugs–crime connection

The relationship between gender and drug use has been referred to as “the big neglected question” in the field of substance misuse (Measham, 2003, p.22). Historically, the addiction literature has focused on male drug users and less

attention has been given to the problems of female users (Neale, 2004). During the 1990s, this focus began to change and female drug users became a topic of interest among researchers (Broom, 1994). However, it did not wholly answer the question of whether there were gender differences in drug misuse (Broom, 1994). As a result, relatively little research was done on the broader issue of whether women and men were fundamentally different in any way in the characteristics of their drug misuse and the problems associated with it.

Nevertheless, information relating to gender differences is available. Research has shown that female and male drug users differ in terms of the nature of their drug use and in associated problems, including patterns of drug use (Neale, 2004), the development of drug-use careers (Kandel, 2000), drug-use initiation (Eaves, 2004), and treatment outcomes (Hser et al., 2004). These findings are important and suggest that both the nature of the problem and the nature of the solution might be different for women and men.

Research on the problems associated with drug misuse has focused mainly on dependency, health, and criminal behavior. In relation to dependence, the findings of research are mixed. Schulte et al. (2005) examined data from the Drug Use Monitoring Program in Australia (DUMA) and found that dependence on illicit drugs was more prevalent among female arrestees than among males. With regard to specific drug types, Lo (2004) reported findings from the US ADAM program which showed that dependence on cocaine was more common among female than male arrestees. However, dependence on cannabis was more prevalent among males. Neale (2004) found, in a study of drug users in treatment, that men were more likely than women to report that cannabis use had been a problem for them at some point in their lives. However, there were no gender differences in “problematic” use of heroin, methadone, diazepam, cocaine, or crack.

Research conducted by Holloway and Bennett (2007) based on NEW-ADAM arrestee data showed that over two-thirds (69%) of all arrestees tested positive for at least one of the seven illicit drug types investigated. There were significant gender differences in the proportions testing positive for six of these seven drug types. Significantly more women than men tested positive for cocaine (including crack), opiates (including heroin), methadone, and benzodiazepines. In contrast, significantly more men than women tested positive for cannabis and alcohol. Hence, according to the urinalysis results, female arrestees were more likely than males to have recently used certain “hard” drugs, while male arrestees were more likely than females to have used certain “recreational” drugs.

Ethnicity and the drugs–crime connection

Drug use among offenders of different ethnicity has been investigated in studies of prisoners. Budd et al. (2005) reported findings from the Criminality Survey of prisoners in England and Wales. Their results showed that white prisoners were more likely than black and Asian prisoners to have used any illicit drug (74% compared

with 64% and 50%, respectively). White prisoners were also more likely to have used Class A drugs, to have used heroin, crack, or cocaine, to have injected a drug, and to have experienced problems staying off drugs.

Boys et al. (2002) examined drug use and initiation in prisons in England and Wales using data from a national survey of over 3,000 prisoners. White prisoners were found to be more likely to report ever having used heroin and/or cocaine than those prisoners categorized as black. Among those who had used heroin in prison, black prisoners were significantly more likely to have initiated use in prison. By contrast, being from an "other" ethnic group significantly reduced the likelihood of initiation of cocaine use in prison.

Borrill et al. (2003) conducted a quantitative survey of prisoners and a qualitative survey of prison staff to explore differential substance misuse treatment needs of women, ethnic minorities, and young offenders in prison. The most important finding, according to the authors, was the finding that white women had problems relating to opiates, whereas black women were more likely to report problems relating to crack. The qualitative findings supported the survey results and confirmed that black women needed more interventions focused on crack use. Overall, 90% of white women were dependent on heroin and 25% on crack. By contrast, just 10% of black/mixed-race women were dependent on heroin and 21% were dependent on crack. Ethnic differences in injecting behavior were also found among the sample. A higher rate of injecting was found among white women than among black/mixed-race women (45% compared with 9%). White women were also more likely to be dependent on two or more drug types (46% compared with 28%).

Drug misuse in the offender population has also been investigated using arrestee surveys. Studies across various countries have also found a lower overall prevalence of drug use among ethnic minority groups. In South Africa, for example, urinalysis results revealed that white arrestees were more likely than non-white arrestees to test positive for any illicit drug (67% whites, 64% "coloreds," 38% Africans, 48% Indians/Asians) (Parry et al. 2004). Ethnic group differences were also found in the use of individual drug types. Non-white arrestees were the most likely to test positive for cannabis, mandrax, and benzodiazepines, whereas white arrestees were more likely to test positive for cocaine, amphetamines, and opiates (Parry et al., 2004).

Ethnic group differences in drug use were also identified in the US ADAM program (National Institute of Justice, 2003). Urinalysis results for 1999 showed that black arrestees were more likely than white arrestees to test positive for cannabis and cocaine, but were less likely to test positive for methamphetamine. In fact, only 0.8% of black arrestees tested positive for methamphetamine (lower than all other groups). There was little difference between white and Hispanic arrestees, although 15% of white arrestees tested positive for methamphetamine compared with 6% of Hispanics. Peters et al. (2002) also used data from the ADAM program and explored heroin use among arrestees in the southern states of the United States. The results showed that African Americans had the lowest prevalence of heroin use among the three ethnic groups investigated. In 1997, the prevalence of heroin use was 10% among Hispanics, 9% among whites and 4% among African Americans.

The NEW-ADAM surveys of arrestees provided information on ethnic group differences among drug-misusing offenders in the United Kingdom (Holloway and Bennett, 2008) White arrestees were significantly more likely than non-white arrestees to report having used alcohol, amphetamines, ecstasy, heroin, crack, and cocaine in the last 12 months. By contrast, there was little difference in the proportions of white and non-white arrestees reporting using cannabis in the last year (68% and 65% respectively). Overall, white arrestees were significantly more likely than non-white arrestees to report having used at least one of 19 illicit drug types in the last 12 months (80% compared with 71%). They were also significantly more likely to have used multiple drug types (64% compared with 41%).

Evidence of a Causal Connection

The main aim of investigating the drugs–crime connection is to determine if the relationship is causal. If the relationship were non-causal, then much of the importance of studying the connection would be lost. To what extent does the research suggest that drug use causes crime or crime causes drug use?

One of the most influential explanations of the causal connection between drug use and crime was developed by Paul Goldstein in a series of articles published in the late 1980s. Goldstein proposed a tripartite conceptual framework that divided explanations of the connection into three models: “economic-compulsive,” “psychopharmacological,” and “systemic” (Goldstein 1985). “Economic-compulsive” crime was committed as a means of generating money to support drug use. “Psychopharmacological” crime occurred when the use of drugs resulted in change or impairment in cognitive functioning. “Systemic” crime was associated with crime that occurred as part of the system of drug distribution and use. This taxonomy was soon accepted as the definitive conceptualization and has been used extensively ever since.

Since the early work of Goldstein on drug-related homicides in New York City, there have been a large number of qualitative studies that have examined the mechanisms by which different kinds of drug use and crime might be connected. Research on drugs and prostitution identified some of the intricacies of mechanisms linking drugs and crime. Feucht (1993) found that crack use connected to prostitution in several different ways, including enabling the women to cope with the difficult work conditions, making them feel sexy, reducing their inhibitions, and making the client more relaxed. Maher and Curtis (1992) reported that crack use fundamentally altered the nature of prostitution in a wide range of ways, including the number of women on the streets, the kind of sex work that they did, the amount of money that they received, and interactions with the informal economy.

Research on drug-related property crime has also identified a variety of mechanisms linking drug use and acquisitive crimes such as burglary, robbery, and drug dealing. Bennett and Wright (1984) found that the pharmacological effects of alcohol often gave potential offenders courage that then prompted them to commit an offense. They also showed that burglars sometimes had already decided to

commit an offense and consumed alcohol to give them the courage to act upon it. Cromwell et al. (1991) found that drug use often impaired judgment, which affected not only the decision to offend, but also the risks that might be taken in selecting the potential target. Wright and Decker (1997) interviewed currently active armed robbers in St. Louis, Missouri, and found that the proceeds of robbery were often used for pleasure-seeking purposes that typically included drug use.

Studies focusing on the crimes of specific types of drug user have also helped identify potential drug-crime mechanisms. Wright and Klee (2001) showed that amphetamine users became involved in violence as a result of the psychoactive effects of the drug in providing confidence and energy, economic motives such as raising money for drugs, and through systemic violence resulting from involvement in a drug-using subculture. Brain et al. (1998) found that the main link between drug use and crime among crack users was economic and the need for money to buy drugs.

Research that has compared the mechanisms linking several drug and crime types has provided an opportunity to examine variations in the drug-crime connections across different kinds of offenses. Carpenter et al. (1988) interviewed 100 young people living in the community in New York State about the relationship between their drug use and crime. They found that thefts were typically committed to obtain money for drugs, violence was often the result of the pharmacological effects of recent drug use, and burglaries were often committed intentionally under the influence of drugs for their facilitative effect. Similar results were obtained by Palacios (1996), who interviewed 40 arrestees in Dade County Jail in the United States. Theft, shoplifting, and deception were mainly committed for money for drugs, whereas stealth crimes such as burglary were often committed under the influence of tranquilizers and alcohol for their calming effects, to reduce fear and to give offenders confidence that they would not get caught. Bean and Wilkinson (1988) interviewed drug users in Nottingham, England, and noted that assault was associated with drug dealing, violence was generally associated with tranquilizer use through judgment impairment effects, and burglary was normally committed for items to be sold for drugs. Simpson (2003) similarly reported that burglary and shoplifting were often committed for money to buy cannabis; theft from family members was typically associated with raising funds for heroin use; and shoplifting was associated with the judgment-impairing effects of benzodiazepines.

Research by Bennett and Holloway (2009) investigated the causal connection between drug use and crime by interviewing prisoners about their past drug use and crime histories. Respondents were asked whether any of 10 drug types and 10 crime types had ever been connected. In other words, they were asked about 100 potential drug-crime connections. In total, 77 of the 100 drug-crime connections were identified by at least one offender. The most common drug types reported as being involved in a drug-crime connection were heroin, followed by tranquilizers, alcohol, and crack. The most common offenses reported were drug dealing, followed by handling, assault, and shoplifting. The three most common drug-crime connections were heroin and drug dealing, heroin and burglary non-dwelling, and heroin and handling (receiving stolen goods). Conversely, there were some drug

types and crime types that were rarely cited as being causally linked. LSD and methadone were rarely mentioned as being linked to crime. Similarly, there were few links mentioned between drug use and prostitution, shoplifting and ecstasy, burglary and cocaine, and assault and cannabis (all of which were mentioned just once).

During the interview, each respondent was asked to describe in detail a recent occurrence of a small number of drug–crime connections that they had mentioned in the structured questionnaire. On average, respondents were able to describe, within the time limits of the interview, details of approximately three occasions on which a particular drug and a particular crime were connected. The vast majority of these narratives (89%) described drug–crime connections in which drug use caused crime, while the remainder (11%) gave connections whereby crime caused drug use. The most common mechanisms mentioned were “economic” (56% of all mechanisms identified) followed by “pharmacological” explanations (37%) and “lifestyle” (7%).

Discussion and Conclusion

The main aim of the chapter was to examine the research evidence on the association between drug misuse and criminal behavior to determine whether the two were linked. We found that involvement in drug use was strongly associated with involvement in crime. The research was almost unanimous in finding that drug users were more likely than nonusers to be criminals and that criminals were more likely than non-criminals to be drug users.

The association between particular drugs and particular crimes was variable. For example, the strongest connection found by Bennett and Holloway (2005) was between heroin and shoplifting. Strong associations were also found in relation to crack and robbery and crack and drug-supply offenses. Cannabis users were almost three times as likely to report drug-supply offenses as nonusers and twice as likely to report non-residential burglary.

Perhaps the biggest issue of the whole debate on the drugs–crime connection is whether the two are causally connected. If they are not causally connected, then the reason for studying the connection and tackling the relationship through government interventions becomes less relevant. The strongest evidence of a drug-causes-crime connection would be proving that when drug use goes up, crime goes up and when drug use goes down, crime goes down. In general, research tends to show that the two variables are connected in this way in that changes in one appear to be associated with changes in the other. However, the research suggests that this connection is not true for all drug types and all crime types. The changes are most noticeable in relation to heroin and crack use, and theft and drug-dealing offenses.

Studies based on interviews with drug users and offenders help show whether the individuals involved think that the connections between drug use and crime are causal. Most of the studies discussed report that drug users and offenders tend to see their drug use and crime as causally connected. However, the nature of the

connection is wide-ranging and examples are given that cover most of the main theories of the drug–crime the connection.

Several conclusions can be drawn from the research and the preceding discussion. The first is that theoretical development needs to be aligned to empirical evidence, and to achieve this more work needs to be done on the mechanisms linking drug use and crime. The current review has made some contribution to this by identifying some of the factors involved. However, refinement of these causal processes is needed in order to provide a better understanding of the relationship.

The second is that Goldstein's tripartite conceptualization does not wholly explain the drug–crime connection and more research needs to be conducted to understand the causal processes involved. This might take the form of both theoretical advances, such as integrating the various explanations involved, and empirical advances, such as identifying further mechanisms linking drug use and crime and their association with individual and demographic characteristics.

Finally, the broad association between drug use and crime has more or less been demonstrated and there is now less need for research which simply reinforces this fact. Instead, future research should be conducted that examines variations in drug–crime connection across time and locations and takes into account other important variables such as the state of the economy, the price of drugs, and changes in patterns of supply.

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The Impact of Illicit Drugs on Public Health

Louisa Degenhardt and Wayne D. Hall

Introduction

Illicit drugs are those covered by international drug control treaties such as the Single Convention on Narcotic Drugs (United Nations 1972). They include: cannabis products (e.g., marijuana, hashish, bhang); stimulant drugs (e.g., cocaine and methamphetamine); a range of drugs with stimulant and hallucinogenic properties (such as 3,4-methylenedioxy-N-methylamphetamine [MDMA, or “ecstasy”] and novel psychoactive substances); and illicit opioids (e.g., heroin, opium, and diverted pharmaceutical opioids such as methadone and morphine).

Between 165 and 315 million people were estimated to have used illicit drugs worldwide in 2012 (UNODC 2013b). Cannabis was the most widely used, with 181 million users (range 129–230 million), comprising 3.9% of the global population 15–64 years (UNODC 2013b). Amphetamine-type stimulants (ATS) were the next most widely used: with 34 million users worldwide (range 14–53 million); cocaine had 17 million (range 14–21); and MDMA had 20 million (range 10–29 million) (UNODC 2013b). An estimated 17 million persons used heroin or opium, and 32 million used any illicit opioid (range 28–36 million) (UNODC 2013b).

This chapter summarizes data on the prevalence, correlates, and probable consequences of use of the amphetamines, cannabis, cocaine, and opioids – the most commonly used and studied of the illicit drugs. We focus on opioid, amphetamine, cocaine, and cannabis dependence because dependent users of these drugs account for most of the harms that are consumed and they experience most of the harms (Rydell and Everingham 1994; Hall, Lynskey et al. 1999; National Drug Strategy 2007). Illicit opioids and psychostimulants contribute substantially to the morbidity and mortality attributed to illicit drug use in many developed societies, via fatal and

nonfatal drug overdose and HIV and other blood-borne virus (BBV) transmission such as hepatitis C (HCV) when drugs are injected using non-sterile injecting equipment (Strathdee, Hallett et al. 2010; Degenhardt and Hall 2012).

Although cannabis use accounts for around 80% of illicit drug use worldwide, estimated levels of dependence among users are lower than for other drugs, and morbidity attributable to its use is smaller than for other drugs (Degenhardt, Whiteford et al. 2013). The morbidity and mortality attributable to cocaine and ATS has been less extensively studied than opioids.

MDMA (ecstasy) and emerging psychoactive substances have been used for too short a time in most developed societies to enable a good assessment of their harms and there have been few formal evaluations of the effectiveness of interventions for problematic use (Marsden, Stillwell et al. 2006). Much the same can be said for a growing number of “novel psychoactive substances” (NPS), many of which are similar in chemical structure and subjective effects to psychostimulants and hallucinogens.

We draw upon published reviews of data on the epidemiology of illicit drug use and dependence (Mathers, Degenhardt et al. 2008; Bucello, Degenhardt et al. 2010; Calabria, Degenhardt et al. 2010c; Degenhardt, Calabria et al. 2010; Nelson, McLaren et al. 2010; Degenhardt, Bucello et al. 2011), remission from dependence (Calabria, Degenhardt et al. 2010a), and mortality among illicit drug users (Singleton, Degenhardt et al. 2009; Calabria, Degenhardt et al. 2010b; Degenhardt, Bucello et al. 2011; Degenhardt, Singleton et al. 2011; Mathers, Degenhardt et al. under review). Our attribution of adverse health effects to these drugs draws on literature reviews of acute and chronic harms of illicit drug use (Hall, Degenhardt et al. 2001; Karch 2002; Kelly, Darke et al. 2004; Darke, Degenhardt et al. 2006; Kaye, McKetin et al. 2007; Darke, Kaye et al. 2008; Hall and Degenhardt 2009; Darke 2010). We also summarize global burden of disease (GBD) studies that estimated the regional and global distribution of health burden from illicit drugs and compared this with the burden attributable to alcohol and tobacco use, and draw on previously published reviews (Degenhardt and Hall 2012; Degenhardt, Whiteford et al. 2013).

The Prevalence of Drug Use and Dependence

There are major challenges in accurately estimating the prevalence of an illegal, and often stigmatized, behavior such as illicit drug use. This is especially so in settings where illicit drug use may lead to imprisonment. By necessity, a variety of imperfect methods have to be used to estimate prevalence of use.

The availability and quality of data for estimation varies globally. The best data come from developed countries of Europe, North America, and Australasia. There is consequently very great uncertainty in answering the question: how many people globally use illicit drugs?

The health risks of illicit drug use vary with frequency and quantity of use and route of administration. In the International Classification of Diseases (ICD) (WHO 1993),

harmful drug use requires evidence that substance use is causing physical (e.g., organ damage) and/or psychological harm (e.g., drug-induced psychosis). Drug dependence requires the presence of three or more indicators of dependence for at least a month within the past year (WHO 1993). In the American Psychiatric Association's (2000) DSM-4, these criteria for dependence include: a strong desire to take the substance; impaired control over use; a withdrawal syndrome; tolerance to the effects of the drug; requiring larger doses to achieve the desired effect; a disproportionate amount of time spent obtaining, using, and recovering from use; and continuing to take other drugs despite the problems that occur. DSM-5 has combined abuse and dependence criteria to form a "substance use disorder" with cut-offs for mild, moderate, and severe disorders (American Psychiatric Association 2013).

Globally, an estimated 11 to 21 million people injected drugs in 2007 (Mathers, Degenhardt et al. 2008). IDU has been documented in 151 countries (Mathers, Degenhardt et al. 2010). Prevalence varies considerably across regions, and between and within countries from 0.02% of those aged 15-64 years in India and Cambodia, to >1% in Azerbaijan, Georgia, Mauritius, Russia, Estonia, Malaysia, Canada, Ukraine, Puerto Rico and Australia. Russia, China and the United States accounted for over 40% of the estimated global intravenous drug user (IDU) population (Mathers, Degenhardt et al. 2008).

Opioid and amphetamine dependence are estimated to be the two most common forms of illicit drug dependence globally (15.4 million and 17.2 million estimated cases, respectively) (Degenhardt, Whiteford et al. 2013). An estimated 13.1 million persons were dependent on cannabis and 6.9 million on cocaine. Males formed the majority of cases (64% each for cannabis and amphetamines, and 70% each for opioids and cocaine) (Degenhardt, Whiteford et al. 2013).

Assessment of trends in other countries often relies upon indirect indicators of drug supply, drug use, and problems related to drug use (Faggiano, Vigna-Taglianti et al. 2010). Despite some reported increases in the total number of illicit substance users, some indicators suggest that global illicit drug consumption has remained relatively stable over recent years (UNODC 2013b). The market for ATS appears to be growing, with more people having used them than opiates in 2010 and 2011 (UNODC 2013b). Seizures of the drug increased 66% in the 2010-11 period. Most data on cocaine dependence come from the United States and Western Europe (Degenhardt, Bucello et al. 2011), but the cocaine market may be shifting to Asia, Oceania, and the Caribbean (UNODC 2013b).

Opioid use appears to be declining in Europe, possibly due to an aging population and perhaps because of short-term impacts of interdiction of supply (UNODC 2013b). However, there is some evidence that since 2009, opioid use has increased in East and Southeast Asia, Central and West Asia, and Africa (UNODC 2013b). Afghanistan remains the world's largest producer of opium poppies, with net cultivation increasing by 36% from 2012-13 and accounting for around three-quarters of the world's illicit opium production (UNODC 2013a; SIGAR 2014). Since 2005, the number of regular heroin users in Afghanistan has increased, with a recent study

suggesting that the point prevalence of opioid use (ascertained via biological samples) in Afghanistan was 5% (Cottler, Ajinkya et al. 2014).

The Natural History and Risk Factors for Use and Dependence

Studies in high-income countries, with relatively high levels of cannabis use, have reported a common temporal ordering of drug initiation – alcohol and tobacco, followed by cannabis use, and then other illicit drugs – that persists after control for possible confounders (Hall and Lynskey 2005; Kandel, Yamaguchi et al. 2006; Hall and Degenhardt 2009). Use of other illicit drugs is more prevalent than cannabis in some countries, and the association between initiation of alcohol, tobacco, and cannabis, and other illicit drug use, is stronger in some countries (e.g., the United States) than others (e.g., the Netherlands) (Degenhardt, Dierker et al. 2010). Variations in patterns of drug use initiation between countries and cultures suggest that entry into illicit drug use reflects social context and drug availability, the characteristics of drug users, and social settings that facilitate or deter use.

Drug use is consistently more common in males than females (Bachman, Wadsworth et al. 1997; Degenhardt, Chiu et al. 2008). Rates of cannabis use peak in young adulthood and decline as young people enter relationships, marry, have children, engage in further education, and enter the workforce. Those who do *not* make these transitions are more likely to persist in their drug use (Bachman, Wadsworth et al. 1997).

The natural history of illicit drug *dependence* has been poorly studied in prospective cohort studies. The limited evidence suggests that a minority will no longer meet criteria for dependence a year after diagnosis (Calabria, Degenhardt et al. 2010a). This proportion is higher for cannabis and amphetamines than for heroin and cocaine (Calabria, Degenhardt et al. 2010c).

Risk Factors for Illicit Drug Use and Dependence

Risk factors for developing illicit drug dependence are often consistent across the different categories of illicit drugs, and often co-exist (Fergusson, Boden et al. 2008). Social and contextual risk factors for illicit drug dependence include low socioeconomic status (Daniel, Hickman et al. 2009), early substance use onset (Kellam, Reid et al. 2008), and social norms that are tolerant of alcohol and other drug use (Lascala, Friesthler et al. 2005). Family factors, including poor quality of parent–child interaction and relationships (Cohen, Richardson et al. 1994), parental conflict (Flewelling and Bauman 1990; Fergusson, Horwood et al. 1994; Degenhardt, Dierker et al. 2010), and parental and sibling drug use (Needle, Su et al. 1990; Cohen, Richardson et al. 1994; Lynskey, Fergusson et al. 1994; Marsden, Stillwell et al. 2006) increase the risk of illicit drug dependence during adolescence.

Individual risk factors include being male (Fergusson, Horwood et al. 1994), having an externalizing disorder such as attention deficit hyperactivity disorder or conduct disorders in early childhood (Sartor, Kranzler et al. 2014), personality traits of sensation and novelty seeking (Gossop, Stewart et al. 2008), and low education (Swendsen, Conway et al. 2009). Associating with peers who are antisocial or drug dependent is one of the strongest risk factors for illicit drug dependence in adolescence (Kandel and Andrews 1987; Fergusson, Boden et al. 2008), which operates independently of social, contextual, family, and individual factors (Hawkins, Catalano et al. 1992; Lynskey and Hall 2000). The limited data available suggest that risk factors for developing illicit drug dependence may be consistent across global regions (Hall and Degenhardt 2007; Degenhardt, Dierker et al. 2010).

Health Consequences of Illicit Drug Use

The adverse health effects of illicit drug use conceptually include (Babor, Caulkins et al. 2010): the *acute toxic effects*, including overdoses; the *acute effects of intoxication*, such as accidental injury and violence; developing *dependence* on the drug; and *adverse health effects* of sustained chronic, regular use, such as chronic disease (e.g., cardiovascular disease and cirrhosis), blood-borne bacterial and viral infections, and mental disorders (Table 15.1). Many people who use illicit drugs will use more than one of the four drug types we discuss. The acute and long-term health effects of their drug use may be even greater than for people who use only one drug type.

A major challenge in interpreting associations between illicit drug use and various health-related harms is deciding whether these are causal. A causal inference requires: (a) an association between drug use and the adverse outcome, (b) confirmation that drug use preceded the outcome, and (c) an ability to exclude alternative explanations, such as reverse causation and confounding (Hill 1965). Cohort studies of problem amphetamine, cocaine, and heroin users suggest that these drugs increase risk of premature death, morbidity, and disability. These studies have rarely controlled for social disadvantage, but the mortality excess is too large to be wholly accounted for by this confounding (English, Holman et al. 1995) and the major causes of increased mortality are plausibly and directly related to illicit drug use (Darke, Degenhardt et al. 2006).

Table 15.1 compares the availability of evidence, the quality of evidence, and the strength of associations observed for each drug type for a range of acute and chronic outcomes. Several things are clear: (1) the risks of cannabis use are much more modest than those of other illicit drugs, largely because cannabis does not produce fatal overdoses and it cannot easily be injected; (2) there are more data on cannabis use from prospective population-based cohorts, and for the use of other drug types, and more data from cohorts of users treated for opioid, cocaine, and amphetamine dependence; and (3) the magnitude of the effect is often poorly quantified. There is clearly a need for more prospective, quantitative, longitudinal studies of specific

patterns of drug use (or common combinations) and specific outcomes to better estimate risk. Table 15.1 indicates that although there is evidence linking opioid, cocaine, and amphetamine use with a greater number of adverse outcomes than cannabis, there remain many gaps in knowledge about the nature (causal or not) and magnitude of the risks.

Acute toxic effects

Opioids can cause respiratory depression and death, with a recent systematic review of cohort studies suggesting a pooled overdose crude mortality rate (CMR) of 0.68 per 100 person years (95%CI: 0.57, 0.78) (Mathers, Degenhardt et al. under review). The risk of overdose is increased when: opioids are used in combination with alcohol and benzodiazepines (Darke and Zador 1996; Warner-Smith, Darke et al. 2001); and when resuming use after periods of abstinence, for example after drug treatment or imprisonment (Darke, Degenhardt et al. 2006).

Stimulant-related overdoses can trigger fatal cardiac arrhythmias and strokes (Karch 2002; Hall and Pacula 2003; Hall and Degenhardt 2009), very rare causes of death in healthy young adults (Karch 2002; Darke, Kaye et al. 2006) In the extremely limited number of cohort studies of stimulant users, CMRs for drug overdose did not differ appreciably from those observed in cohorts of opioid users (Singleton, Degenhardt et al. 2009; Degenhardt, Singleton et al. 2011).

Acute effects of intoxication

Cannabis use impairs cognitive and behavioral functions (Borgwardt, Allen et al. Borgwardt, Allen, Bhattacharyya, Fusar-Poli, Crippa, Seal, Fraccaro, Atakan, Martin-Santos, O'Carroll, Rubia and McGuire, 2008) and probably increases the risk of road traffic crashes (RTC) if users drive while intoxicated. Because these risks are less than those for alcohol, and fewer drivers use cannabis, the estimated proportion of RTC attributable to cannabis in France was 3% (vs. 30% for alcohol) (Laumon, Gadegbeku et al. Laumon, Gadegbeku, Martin, Biecheler and the SAM Group, 2005). These contributions will vary between countries with the prevalence of cannabis use and use of motor vehicles.

Other illicit drugs may adversely affect driving skills (Kelly, Darke and Ross, 2004), although data on the impact of opioids and stimulants on driving are equivocal (Kelly, Darke et al. 2004). Nonetheless, road crashes, falls, drowning, and related injuries are a more common cause of deaths among opioid and stimulant users than non-using peers. The contribution of these causes to drug-related disease burden may have been underestimated, since such deaths among drug users may not be coded as drug-related (Darke, Degenhardt et al. 2006). A pooled estimate from cohort studies of opioid users suggested that the trauma-related CMR was 0.16 per 100 person years (95%CI 0.12, 0.21) (Mathers, Degenhardt et al. under review).

Table 15.1 Summary of reviews of evidence on the major potential acute and chronic consequences of illicit drug use

	Cannabis			Opioids			Amphetamines			Cocaine		
	Effect	Level	Size of effect	Effect	Level	Size of effect	Effect	Level	Size of effect	Effect	Level	Size of effect
Acute toxic effects (fatal overdose)	X	--	0	✓	C	CMR 0.7	✓	C	?	✓	C	?
Acute intoxication effects												
Accidental injury	?	--	--	✓	C	CMR 0.16	?	--	--	?	--	--
Motor vehicle accidents	✓	D	--	?	--	--	?	--	--	?	--	--
Drug-induced psychotic symptoms	✓	A	OR 2-3	X	--	0	✓	A	?	✓	E	?
Myocardial infarction	?	E	--	X	--	0	✓	E	?	✓	E	?
Dependence (lifetime risk %)	✓	A	9%	✓	A	23%	✓	A	11%	✓	A	16%
Adverse health effects of chronic use												
Cardiovascular pathology	?	--	--	✓	E	?	✓	C	?	✓	E	?
Liver disease	X	--	0	✓	C	?	?	C	?	?	--	--
Pulmonary disease	?	--	--	✓	E	?	?	C	?	?	--	--
Cancers	?	--	--	?	C	?	?	--	--	?	--	--
Neurotoxic effects	?	C	--	X	--	--	✓	--	?	✓	--	?
Psychotic disorders	✓	B	OR 2-3	X	--	0	✓	D	?	✓	D	?
Common mental disorders	?	B	--	✓	D	?	✓	D	?	✓	D	?
Suicide	X	B	0	✓	C	CMR 0.12	✓	--	?	?	--	--
Elevated mortality (standardized mortality ratios)	X	B	1	✓	C	14-3 (12-5, 16-2)*	✓	C	6.2@	✓	C	4.7-7.6#

Consequences of unsafe drug injection	Cannabis	Opioids, Amphetamines and Cocaine
HIV	✗ -- 0 --	✓ Risk of HIV infection via injection with an HIV-infected needle: ~ 1 in 125 injections.(Baggaley, Boily et al. 2006)
HCV	✗ -- 0 --	✓ Anti-HCV prevalence varies widely among IDUs, from 1% to greater than 90% prevalence.
HBV	✗ -- 0 --	✓ Prevalence significantly elevated.(Nelson, Mathers et al. in press)
Infective endocarditis	✗ -- 0 --	✓ Most infections due to <i>Staphylococcus aureus</i> (Karch 2002). Risk rarely quantified; two US cohorts of cocaine IDUs found 3–10% of deaths due to sepsis/endocarditis. (Degenhardt, Singleton et al. 2011)
Tuberculosis	✗ -- 0 --	✓ Has been noted in some countries as particularly prevalent as an HIV co-infection. (Perlman, Salomon et al. 1995)

Notes on codes used in this table

Presence or absence of effect

- ✗ This drug not appear to have a significant effect upon the outcome
- ✓ This outcome may be increased by the use of this drug
- n/a not applicable
- ? There is insufficient data on this drug and this outcome to permit conclusions about the association between the two
- OR: odds ratio
- CMR: crude mortality rate per 100 person-years
- SMR: standardized mortality ratio

Level of evidence

- A Experimental or controlled evidence supports this finding
- B Findings across cohorts, representative population-based
- C Findings across cohorts of drug users
- D Findings across cross-sectional studies, representative population-based, or case–control studies
- E Cross-sectional associations among non-representative samples of drug users, case series suggesting outcome
- @ Only one study from the Czech Republic reported SMRs. This should be interpreted with considerable caution
- * Pooled SMR estimated from random effects meta-analysis. Very high heterogeneity existed across studies; stratified analyses investigated this in further analyses and demographic and regional differences were clearly evident

Note: reproduced from a *Lancet* article – details of source references reported in that article (Degenhardt and Hall 2012).

Drug dependence

In the United States, it has been estimated that 20% of people who use an illicit drug will meet criteria for dependence (Glantz, Anthony et al. 2008). Similar proportions have been reported in Australia (Hall, Teesson et al. 1999). Illicit drugs differ in their dependence risk (Anthony, Warner et al. 1994; Hall, Teesson et al. 1999), ranging from 9% of lifetime cannabis users to 23% of lifetime heroin users (Anthony, Warner et al. 1994). This reflects differences in pharmacological effects (drugs with a rapid onset and shorter duration of effect have a higher dependence risk) and route of administration (drugs that are smoked or injected have a higher dependence risk than those swallowed or used intranasally). More heroin injectors meet dependence criteria than cannabis smokers (Anthony, Warner et al. 1994). Amphetamine and cocaine users who smoke or inject have a higher risk of dependence than those who use intranasally (Volkow, Fowler et al. 2004; McKetin, Kelly et al. 2006).

Other adverse health effects

Psychiatric disorder There is a consistent association in longitudinal studies between early-onset, regular cannabis use, and a later diagnosis of schizophrenia (Arseneault, Cannon et al. 2004; Macleod, Oakes et al. 2004; Degenhardt and Hall 2006; Moore, Zammit et al. 2007; Hall and Degenhardt 2009). Increasing evidence suggests that it is not due to confounding. Meta-analyses of prospective population-based studies find a doubling of the risk of psychotic outcomes among regular cannabis users, after controlling for confounders (Arseneault, Cannon et al. 2004; Moore, Zammit et al. 2007). The age of onset of schizophrenia is around 2.7 years earlier in regular cannabis users (Large, Sharma et al. 2011). It is biologically plausible that cannabis use is a contributory cause of schizophrenia in vulnerable individuals (Degenhardt, Hall et al. 2009).

There is a less consistent association between cannabis use and depression, and less convincing evidence for a causal role (Moore, Zammit et al. 2007; Hall and Degenhardt 2009). Anxiety, depression, and other illicit drug use are very strongly associated (e.g., Glantz, Anthony et al. 2008), but it is difficult to ascertain whether these disorders preceded and contributed to the development of problem drug use, or were exacerbated by such use. There is strong evidence from longitudinal studies that heavy alcohol use is a causal factor in depressive disorders (Gossop, Griffiths et al. 1996). Similar longitudinal data are needed to understand the relationships between illicit drug use and depression and other mental disorders.

Suicide Recent reviews have concluded that there is insufficient evidence to decide whether there is a causal relationship between cannabis use and suicide (Hall and Degenhardt 2009; Calabria, Degenhardt et al. 2010b). By contrast, self-reported suicide attempts are more common among problem opioid, cocaine, and amphetamine users (Rossow and Lauritzen 1999) than among peers of the same age, sex, and socioeconomic status (Maloney, Degenhardt et al. 2007). The association is probably

explained by elevated rates of depression among problem drug users (Darke, Degenhardt et al. 2006). The intoxicating effects of these drugs, and the stresses of a dependent illicit-drug-using lifestyle, probably increase suicide risk among depressed drug users. Meta-analyses have produced a pooled CMR for *completed* suicide among opioid-dependent persons of 0.12 per 100PY (CI: 0.08, 0.16) (Mathers, Degenhardt et al. under review).

Adverse consequences of injecting drug use The risks of unsafe injecting primarily arise from opioid, cocaine, and amphetamine use. HIV infection risk following injection with an HIV-contaminated syringe has been estimated at 0.67% (Baggaley, Boily et al. 2006). There is an unquantified but probably lower risk from sharing other contaminated drug-use paraphernalia. HIV sexual transmission risk between HIV-positive IDUs and their sexual partners is much lower, at 0.02–0.05% (Pedraza, del Romero et al. 1999; Marinovich, Castilla et al. 2003; Boily, Baggaley et al. 2009) per heterosexual sex act. The risk during receptive anal intercourse between men may be 0.82% (0.24–2.76%) (Vittinghoff, Douglas et al. 1999). A recent meta-analysis produced a pooled AIDS-related CMR across cohorts of HIV-positive IDUs of 1.99 per 100PY (95%CI 1.29, 2.69) (Mathers, Degenhardt et al. under review).

There are marked geographic variations in the prevalence of IDU and HIV infection in IDUs. IDU has been reported in 151 countries (Darke, Degenhardt et al. 2006) with 0.8 to 6.6 million (of an estimated 11–21 million injectors in 2007) estimated to be living with HIV (Mathers, Degenhardt et al. 2008).

The viruses that cause hepatitis B (HBV) and hepatitis C (HCV) infections are also spread by sharing contaminated injection equipment (MacDonald, Crofts et al. 1996; Donoghoe and Wodak 1998). Large proportions of IDUs are infected with HCV, with an estimated 10.0 million (range 6.0–15.2 million) thought to be anti-HCV positive in 2010 (Nelson, Mathers et al. in press), 75–85% of whom will develop chronic HCV infections (Coutinho 1998; Hallinan, Byrne et al. 2005; Ministerial Advisory Committee on AIDS Sexual Health and Hepatitis: Hepatitis C Subcommittee 2006) that can lead to cirrhosis, liver failure, and hepatocellular carcinoma (Limburg 2004). The proportion of HCV-infected people who develop cirrhosis is estimated at 7% after 20 years, and 20% after 40 years (Dore, Freeman et al. 2002). Additional stresses on the liver from heavy alcohol intake, liver fibrosis, and HIV or HBV co-infection can increase rates and speed of developing complications (Dore, Freeman et al. 2002). Many individuals living with HCV report fatigue, poor sleep, and abdominal pain, which impair quality of life as much as diabetes (Foster 2004). In countries with low rates of HIV infection among IDUs, the burden of HCV among IDUs may be comparatively higher than HIV.

Elevated all-cause mortality

Recent reviews have found no evidence that cannabis use increases overall mortality (Hall and Degenhardt 2009; Calabria, Degenhardt et al. 2010b). A meta-analysis of mortality in opioid users calculated a pooled SMR of 14.3 (95%CI 12.5–16.2)

(Degenhardt, Bucello et al. 2011). These risks vary geographically, with (for example) lower elevations in mortality in Australia and higher elevations in Italy. Fewer cohort studies of cocaine and amphetamine users (Singleton, Degenhardt et al. 2009; Degenhardt, Singleton et al. 2011) report increased premature mortality but less marked than in opioid users.

Burden of Disease Attributable to Illicit Drug Use

In the Global Burden of Disease study 2010, drug use disorders directly accounted for 20.0 million DALYs in 2010 (95%CI 15.3–25.4 million), 0.8% (0.6–1.0%) of all-cause DALYs. This was an increase of 52% from estimates for 1990 (using the same methods), when the direct burden accounted for 13.1 million DALYs, 0.5% (0.4–0.7%) of all-cause DALYs. Population growth accounted for 28%, population aging 2%, and increased prevalence for the remaining 22% of the increase between 1990 and 2010 (Degenhardt, Whiteford et al. 2013).

Regular cannabis use as a risk factor for schizophrenia was estimated to account for around 7,000 DALYs globally via bringing forward the onset and increasing the duration of schizophrenia. Past-year injecting drug use as a risk factor for HIV accounted for 2.1 million DALYs and its contribution to HCV for a further 502,000 DALYs. Past-year IDU as a risk factor for hepatitis B made a smaller contributor to burden (63,000 DALYs). Suicide as a risk of amphetamine, opioid, and cocaine dependence accounted for 854,000, 671,000, and 324,000 DALYs respectively. For the latter outcomes most of the burden was attributable to years of life lost (Kandel, Yamaguchi et al. 2006; Degenhardt, Whiteford et al. 2013).

Harms of Illicit Drug Use Not Captured in Burden of Disease Estimates

Burden of disease estimates do not include the adverse social impacts upon drug users, such as stigma and discrimination; or the adverse impacts that drug users' behaviors have on public amenity (e.g., public drug use, drug dealing, and discarded injection equipment) and public safety (e.g., violence around drug markets, and property crime to finance drug use).

There are also interactions between illicit drug policy and drug-related harm. Internationally and nationally, policies focus on reducing use by criminalizing drug use and supply. This increases the price of illicit drugs (Moore 1990), and illegality probably discourages some people from using these drugs. The prevalence of illicit drug use is therefore probably lower than it might be if their sale and use was as legal as alcohol and tobacco.

On the other hand, the higher price of illicit drugs probably makes it more likely that some illicit drugs users will engage in criminal activities to finance their use (e.g., by drug dealing, property offenses, and fraud) (MacCoun, Kilmer et al. 2003).

Further, violence is often a feature of illicit drug markets, presenting a risk to the well-being of drug users (WHO 2008). Cohort studies of opioid users suggest a pooled homicide CMR of 0.10 per 100PY (0.07, 0.13) (Degenhardt, Bucello et al. 2011), and a recent meta-analysis of toxicological studies of homicide victims found that around 6% tested positive for cannabis, 11% for cocaine, and 5% for opioids (Kuhns, Wilson et al. 2009). Drug-related law enforcement often comprises a substantial fraction of the social costs of illicit drug use (e.g., Collins and Lapsley 2007; Rehm, Gnam et al. 2007). Countries that are sites of illicit drug production and/or trafficking may experience massive social, political, and health disruption from the activities of large-scale criminal networks, as in Afghanistan and Mexico (Reuter 1983).

The criminalization of drug use can also: (1) increase the health risks of illicit drug use (e.g., if users engage in risky injecting to avoid arrest by police) (Jürgens, Csete et al. 2010; Strathdee, Hallett et al. 2010); (2) increase risks of engaging in sex work or other illegal activities to finance drug use, exposing users to violence and sexual risk; (3) discourage treatment seeking (for fear of negative consequences) (Strathdee, Hallett et al. 2010; Wolfe, Carrieri et al. 2010); (4) reduce access to interventions that reduce risk, via legal obstacles, or policy limits on service provision (Degenhardt, Mathers et al. 2010; Jürgens, Csete et al. 2010; Wolfe, Carrieri et al. 2010); and (5) increase the risks of imprisonment and its attendant health risks (Jürgens, Csete et al. 2010; Merrall, Kariminia et al. 2010; Wolfe, Carrieri et al. 2010).

Some countries have ensured that services are accessible to, and accessed by, people who use drugs. Some have achieved high coverage of HIV prevention services for IDUs (Mathers, Degenhardt et al. 2010), and others provide good access to drug treatment and other services (Mathers, Degenhardt et al. 2010; World Health Organization 2010). However, globally, a very low proportion of the IDU population has access to interventions to reduce HIV infection (Mathers, Degenhardt et al. 2010) and treatment coverage globally is also low, because of policy and legal bans, for example, on use of agonist opioids (Degenhardt, Mathers et al. 2010; Wolfe, Carrieri et al. 2010).

Discussion

A significant proportion of young adults in developed countries have used an illicit drug at some time in their lives. Globally, around one in 20 people aged 15–64 years have done so in the past year. Cannabis is most often used and the most readily available. A minority of those who use illicit drugs become dependent on them, and/or inject them. The prevalence of dependence on these drugs appears to be more common in developed countries.

On the available evidence, the majority of the disease burden attributable to illicit drugs is concentrated among “problem” or dependent drug users, especially opioid injectors. The contribution of illicit drugs to GBD is underestimated because not all adverse outcomes of illicit drug use are included. Even so, drug dependence,

HIV infection, and drug overdose are important causes of disease burden. The causes of this burden may be changing in high-income countries: as mortality from HIV declines, the burden attributable to chronic HCV infection among IDUs may increase.

In developed countries, the contribution of illicit drugs to burden of disease is less than that of tobacco, but similar to alcohol (if moderate alcohol use truly has protective effects on cardiovascular mortality). This reflects a combination of: (1) the lower prevalence of problem illicit drug use than alcohol and tobacco use; (2) the fact that adverse outcomes of illicit drug use occur at much younger ages than those for alcohol and tobacco; and (3) the serious consequences of injection of opioids and stimulants (with injecting-related blood-borne viral infections (BBVIs) major contributors to burden) that are not experienced by alcohol or tobacco users. Estimates of disease burden are much less certain in low- and middle-income countries.

In most developed countries, illicit opioid use is the most hazardous type of illicit drug use in terms of mortality. The risks of amphetamine and cocaine use have not been as well studied as those of opioids, but it is probable that these drugs have a lower risk of fatal overdose than opioids. They nonetheless may cause dependence, drug-induced psychosis, violence, and HIV and HCV infections when injected.

Much of the burden attributable to IDU can be prevented or reduced, by needle and syringe programs, opioid substitution treatment, and antiretroviral therapy (Degenhardt, Mathers et al. 2010). Burden is also probably worsened by the criminal status and stigmatization of IDU, high rates of imprisonment, and a lack of funding for interventions to reduce these risks (Degenhardt, Mathers et al. 2010; Jürgens, Csete et al. 2010; Wolfe, Carrieri et al. 2010).

The major adverse health effect of cannabis use is dependence, which in young adults is correlated with, and probably a contributory cause of, psychosis and other mental disorders. The health-related harms of cannabis use are qualitatively different from the other major drug types, in that cannabis contributes more to morbidity than mortality because it cannot be injected and does not cause fatal overdose.

What Don't We Know About Illicit Drug Use and Harm?

A major unintended consequence of criminalizing drug use is poor-quality data on patterns of use and harms. Even in high-income countries with good research infrastructure, illicit drug use may not always be recognized (or recorded) as a contributory cause of death or hospitalization.

Intelligent policy responses to drug problems require better data on the prevalence of different types of illicit drug use and the harms that their use causes to users and society. This is especially so in developed countries with substantial rates of illicit drug use. It is equally important in developing countries that are close to source countries, or whose citizens have ready access to precursor chemicals to illicitly manufacture synthetic drugs. There is a need for the global community to address the technical and political challenges that many countries face in developing this capacity.

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Research on Drugs and Social Characteristics

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Drug use and related disorders are highly associated with race/ethnicity, with rates varying by drug type and race/ethnic group. Substance use is widespread among adolescents of white, American Indian/Alaska Natives, African American, Hispanic, and multiple race/ethnicities. Data from the 2005 to 2008 National Survey on Drug Use and Health show that 37% of adolescents aged 12 to 17 years used alcohol or drugs in the past year and 7.9% met criteria for a substance-related disorder, with American Indians/Alaska Natives having the highest prevalence of use (47.5%) and disorder (15.0%) (Wu, Woody, et al. 2011). Among past-year alcohol or drug users, American Indians/Alaska Natives (31.5%), adolescents of multiple race/ethnicity (25.2%), adolescents of white race/ethnicity (22.9%), and Hispanics (21.0%) have the highest rates of substance-related disorders. Furthermore, whites make up 59.8% of all admissions to public substance use treatment programs, followed by blacks (20.9%) and Hispanics (13.7%) (NSDUH 2011a).

Deaths from drug overdose have increased sharply in the past decade. This increase has been associated with overdoses of prescription opioid pain relievers, which have more than tripled in the past 20 years, escalating to 16,651 deaths in the United States in 2010 (Mack 2013), helping to make prescription drug use the leading cause of drug-induced death in the United States. Data from the US Centers for Disease Control and Prevention show that drug-related deaths vary by race/ethnicity and gender (Mack 2013). Men are twice as likely to die of a drug overdose as women, while non-Hispanic whites account for 82% of all drug-induced deaths. However, currently American Indians/Alaska Natives have the highest rates of drug-related mortality at 17.1 per 100,000 population compared to 16.6 among non-Hispanic whites. This reflects a change from the 1980s and 1990s when non-Hispanic blacks and whites had higher drug-related mortality rates.

African Americans

African American youth previously had consistently lower rates of drug use compared to whites, but in the past 15 years this gap has closed as rates decreased among whites and marginally increased among African American youth (CDC 2012). According to the 2012 National Survey on Drug Use and Health, 11.9% of African Americans aged 12 or older currently use illicit drugs, the second highest prevalence rate following American Indians/Alaska Natives, and 8.9% qualify for substance dependence or abuse. However, research shows that this high prevalence varies by type of drug. For example, African Americans have the lowest rates of inhalant use, the lowest rates of nonmedical prescription drug use (CDC 2012), and low rates of cocaine use (HSYRBS 2011). On the other hand, marijuana use is high, with 25.1% of African American high school students using it in the past month (HSYRBS 2011). Compared to whites, African Americans are significantly more likely to develop cannabis use disorder (Wu et al. 2014).

Gender

Some studies document no gender differences in use among black men and women (Fothergill et al. 2009). Among women, ethnicity is important, as research has documented that African American black women have higher rates of substance use disorders than Caribbean black women (Broman et al. 2008). However, African American women who have a strong ethnic identity have greater identification with male gender roles which is in turn linked to higher drug use (Nguyen and Belgrave 2011). African American female drug users typically report high levels of powerlessness and experience high levels of sexual exploitation and degradation by drug-using men (Maher et al. 1996). Drug-using women tend to grow up in severely distressed households where drug abuse, sexual exploitation, and violence are the norm (Dunlap et al. 2002). Among African American women, drug use is also associated with managing loss, including the separation of someone or something such as death or desertion of a significant other, loss of child custody, and rejection by a significant other (Roberts 1999). Emotional, physical, and sexual abuse also strongly influence drug use among this population (Roberts 1999). This is particularly troubling since these conduct norms among African American women are often replicated in the next generation (Dunlap et al. 2002).

Context

Residential segregation and discrimination are important factors for understanding drug use among African Americans. In particular, residential isolation is positively related to injection drug use prevalence (Cooper et al. 2007). African American families have struggled for generations with persistent poverty, especially in the

inner city, and these conditions were further strained during the 1980s and 1990s by the widespread use of crack cocaine (Dunlap, Golub, and Johnson 2006). Nonetheless, crack use and distribution were more highly prevalent among men. Women comprised a minority among crack sellers and usually perform the lowest roles (Dunlap and Johnson 1996). Contextual factors including social networks, party and club attendance, and drug-selling activities, all typical of emerging adulthood and urban lifestyle, are also important factors in drug use (Schensul and Burkholder 2005). However, research shows that known predictors of drug use are consistent across rural and non-rural contexts (Vazsonyi, Trejos-Castillo, and Young 2008).

Research has documented that discrimination is a relatively common phenomenon among ethnic and racial minority groups in the United States (Williams, Neighbors, and Jackson 2003). Among African Americans, perceived discrimination is a significant predictor of substance use (Borrell et al. 2007; Borrell et al. 2010; Yoo et al. 2010). Specifically, discrimination has been found to be associated with smoking (Bennett et al. 2005; Chae et al. 2008; Guthrie et al. 2002; Landrine and Klonoff 2000; Klonoff and Landrine 1996; Landrine et al. 2006; Wiehe et al. 2010), alcohol consumption (Martin, Tuch, and Roman 2003; Yen et al. 1999a; Yen et al. 1999b), and drug use (McLaughlin, Hatzenbuehler, and Keyes 2010; Whitbeck et al. 2001). Research among drug users has documented users who experience discrimination and subsequently develop more sex and drug-using ties, increasing their risk of contracting HIV (Crawford et al. 2013). Racial discrimination in particular is associated with increased sex, drug-using, and injecting ties.

It is important to note that the consequences of drug use among urban youth have implications for further economic and social marginalization of urban, multiethnic low-income emerging adults (Schensul and Burkholder 2005). Additionally, research has documented that more frequent substance use in adolescence and lower-income and less-frequent church attendance in early adulthood increase the risk of mid-life drug use (Fothergill et al. 2009).

Asian Americans and Pacific Islanders

Overall, Asian Americans and Pacific Islanders have relatively low rates of drug use compared to other race/ethnicities (NSDUH 2012; CDC 2012). Data from the 2005–2011 National Surveys on Drug Use and Health show that while rates of marijuana use increased among whites, there were no significant yearly changes in drug-use prevalences among Asian Americans or Native Hawaiians/Pacific Islanders (NHs/Pis) (Wu et al. 2013). Multiracial Native Hawaiians, other Pacific Islanders, and Asian Americans have particularly high rates of drug use and dependence (Sakai, Wang, and Price 2010). Compared with Asian Americans, NHs/Pis have higher odds of marijuana, cocaine, heroin, and nonmedical prescription drug use (HSYRBS 2011) and mixed-race individuals had higher odds of using marijuana, cocaine, hallucinogens, stimulants, sedatives, and tranquilizers (Wu et al. 2013). While both groups have lower rates of substance dependence than other race/ethnicities,

NH/PIs have overall higher rates (5.4%) than Asian Americans (3.2%) (NSDUH 2012). Ecstasy and nonmedical prescription drug use, on the other hand, are relatively common among Asian American youth. Among Asian American young adults, ecstasy was associated with having been born in the United States, having been approached by drug sellers, criminal justice system involvement, and positive attitudes toward substance use (Wu, Liu, et al. 2011). In addition, nonmedical prescription drug use is common among Asian American youth, with 11.8% reporting use in the last month (HSYRBS 2011).

Gender

Research on drug use in female Asian American and Pacific Islander populations is largely limited. The 2011 High School Youth Risk Behavior Survey found that female Asian Americans had significantly lower rates of marijuana, cocaine, heroin, methamphetamines, and ecstasy use than Asian American males. Fazio et al. (2010) found gender and sexuality were more related to club drug use in Asian American youth than immigration status and length of time in the United States. While Asian American males overall had higher lifetime rates of club drug use and frequency of use, lesbian women had higher lifetime rates of methamphetamine, LSD, mushrooms, and salvia than all men by subgroup. In addition, women were significantly more likely than men to use methamphetamines at home, rather than at a rave or party (Fazio et al. 2010).

Context

Similar to African Americans, discrimination is an important social factor contributing to drug use among Asians. Asian Americans who are treated like foreigners because of their race are at increased risk of substance use, after controlling for age, gender, education, family income, health insurance, nativity status, and language, and other types of racial discrimination (Yoo et al. 2010). As another example, reports of unfair treatment among Filipino Americans are associated with prescription drug use, illicit drug use, and alcohol dependence regardless of gender, ethnic identity, nativity, or language spoken (Gee, Delva, and Takeuchi 2007). Moloney, Hunt, and Evans (2008) found that Asian American club drug users viewed their drug use as unusual for the Asian American population and suggestive of the amount they have parted from Asian culture and in turn identify with mainstream American culture. Drug use was also linked to acculturation stress and confusion with their identities as Asian Americans.

Acculturation has been found to mediate drug use for some substances and some Asian American ethnic groups. Peer use is a risk factor and, to a lesser extent, academic achievement is a protective factor for drug use among youth from different Asian American ethnic groups (Thai, Connell, and Tebes 2010). Also, although

acculturation is a predictor of substance use, when peer use and academic achievement are taken into account, acculturation – like ethnicity – no longer predicts use. Acculturation represents a change in one's cultural orientation as immigrants adapt to a new cultural context. Hussey et al. (2007) found that compared to foreign-born youth, US-born Asian adolescents are more likely to engage in sex and drug risk behaviors. Family and residential characteristics associated with immigrant status partly account for this finding. The authors conclude that among Asian adolescents, assimilation to US risk behavior norms occurs rapidly and is evident by the second generation.

Hispanics

Hispanics are now the largest and fastest-growing minority group in the United States. Rates of drug use among Hispanics tend to be between rates of use for whites and blacks, although this varies by drug type (NSDUH 2011b; Warheit et al. 1996). For example, Hispanics are less likely to report nonmedical prescription drug use than whites, but more likely to report use than blacks and Asians (Ford and Rivera 2008). Research among Hispanics in treatment has found that Hispanic clients are in treatment more often for heroin use and are referred to treatment more often by the criminal justice system compared to whites in treatment (Reif, Horgan, and Ritter 2008). In fact, Mexican Americans have historically had the highest rates of injection heroin use when compared to other groups (Bullington 1977; Casavantes 1976; Moore 1978).

Gender

In general, Latinas have lower rates of use compared to their male counterparts across drug types such that Latinas have extraordinarily low rates of use (Finch 2001). Among Latinas there is a strong interrelationship between drug use and sexual relations. For example, a study comparing male and female injecting drug users in Harlem found that significantly more women than men reported that at the first injection episode, they were injected by a sexual partner, were provided the syringe by their sexual partner, had sex with the initiator after being injected the first time, and were injected by a person greater than or equal to 5 years older than themselves (Diaz et al. 2002).

Context

Cultural and acculturation-related processes are central to the understanding of the epidemiology and etiology of drug use among Hispanics (Amaro et al. 1990; Prado et al. 2008). Research has documented that Hispanic adolescents are likely to initiate drug use at a younger age than non-Hispanic white youth (Johnston et al. 2008),

which may contribute to disparities in prevalence rates of HIV, assaults, and suicides (Arias et al. 2003). Understanding aspects of Hispanic culture helps us to understand the emergence of use and abuse as well as responses to treatment interventions among this rapidly growing population (Szapocznik et al. 2007). For example, risk factors that are unique to the cultural and social context of the Mexican American community have been found to be associated with injection drug use (Valdez, Neaigus, and Cepeda 2007). It has been documented that while new forms of heroin administration have recently emerged (non-injecting use) in Mexican American communities, the prevalence rates for transitioning or resuming injecting drug use practices remain high.

Country of origin and nativity are especially important for understanding patterns of drug use among Hispanics. Cuban Americans have the highest rates of marijuana and cocaine use compared to Mexican Americans, Puerto Ricans, and other Latin Americans (Delva et al. 2005), while Puerto Ricans tend to have the highest rates of marijuana use (SAMHSA 2004). It has also been documented that US-born Hispanics have higher rates of use compared to foreign-born Hispanics (Vega, Gil, and Kolody 2002; Hussey et al. 2007). In other words, foreign birth appears to protect against substance use among Hispanics (Ojeda, Patterson, and Strathdee 2008). Even among foreign-born Hispanics, the length of time living in the United States is positively associated with drug use (Warheit et al. 1996). The most consistent finding for Hispanics' drug use is the relationship between acculturation and drug use. In short, more US-acculturated Hispanics have higher rates of drug use (Gil, Wagner, and Vega 2000; Ford and Rivera 2008). One study found that English-speaking Hispanics have 382% greater odds of marijuana use (Finch 2001), although research has found that social learning variables, gang membership, and susceptibility to peer influence account for drug use among adolescents better than acculturation, casting doubt on the relationship between acculturation and drug use (Miller 2011).

Discrimination is also one mechanism that links acculturation and drug use in Hispanics. A study of Hispanics found discrimination to be positively associated with lifetime and current (past month) use of tobacco, alcohol, marijuana, and inhalants among adolescents (Okamoto et al. 2009). Finally, Tran, Lee, and Burgess (2010) found that for Hispanic immigrants, perceived discrimination is significantly related to number of past-month drinking days and past-month binge drinking but not related to cigarette smoking. However, acculturation may moderate the relationship between discrimination and substance use (Finch, Kolody, and Vega 2000).

Finally, similar to African Americans, Hispanics are likely to reside in poor and disorganized neighborhoods, which may contribute to higher rates of drug use. The rates of poverty and economic deprivation among Hispanics may contribute to drug use among this population (Gruenewald et al. 2013; Finch 2001). These disorganized neighborhoods tend to have higher availability of drugs, which is important when considering that drug availability is a robust indicator of drug use among Hispanic adolescents (Miller 2011). Historically, many Hispanic enclaves were situated in close proximity to vice districts where prostitution, gambling, and illegal alcohol and drug consumption were tolerated by public authorities

(Bowser 2003; Valdez and Cepeda 2010). These “ethnic vice districts” have historically provided a niche for immigrants in both legal and illegal economic activities that otherwise would not have developed (Light 1977). Exposure to these activities led to the participation of Mexican Americans and Mexicans in criminal activities and involvement in heroin use (Valdez 2005; Valdez and Kaplan 2007).

American Indians and Alaska Natives

Drug use is a significant and pervasive problem among American Indians and Alaska Natives (AI/ANs), with rates of use higher than the national average (NSDUH 2012). For example, among persons aged 12 and older, AI/ANs have the highest rate of past-year injection drug use (NSDUH 2012), have significantly greater rates of nonmedical prescription drug use and drug use disorders (Huang et al. 2006), have the highest rates of inhalant use (NSDUH 2014), and have high rates of cannabis use disorders and dependence (Stinson et al. 2006). In addition, 21.8% of AI/ANs aged 12 or older qualify for substance dependence or abuse (NSDUH 2012). Compared to all other racial groups, natives have a significantly younger age of onset for marijuana and methamphetamine, have a significantly higher mean number of drug use injections, and inject cocaine on significantly more days (Dickerson et al. 2012). However, research shows that although natives report higher levels of substance use and abuse than do those from other racial/ethnic groups, these differences are attenuated when sociodemographic and individual-level risk/protective factors are taken into account (Akins et al. 2013).

Gender

Contrary to other race/ethnic groups, native women are more adversely affected by substance use in general (Forcehimes et al. 2011). Data from substance abuse treatment admissions from 2001 to 2005 show that methamphetamine use is growing among natives (Spear et al. 2007). Specifically, the study found that the number of American Indians reporting methamphetamine as their primary drug in Los Angeles County significantly increased, particularly among females. The high prevalence of drug use found among native women may be due to the increasingly high rates of physical and sexual abuse among native women (NIJ 2000). However, gender differences may be tribe specific since both traditional matrilineal and patrilineal tribes exist on reservations (Whitesell et al. 2007).

Context

High poverty and unemployment and ongoing cultural and historical trauma are predominant issues among AI/ANs. Additionally, migration of the native populations from reservations to the urban areas has resulted in mixed ethnicities of

AI/AN children. In total, about two-thirds of AI/ANs reside in non-reservation, urban settings. Among youth living in urban settings, ethnic pride is strongly related to maintaining anti-drug norms (Kulis, Napoli, and Marsiglia 2002). However, there has been limited research conducted on reservations. One study found that 30% of tribal members on a reservation reported lifetime use of nonmedical OxyCotin (Momper et al. 2013). Another study examined drug use disparities between native groups and a general US population sample (Whitesell et al. 2007). This study found disparities not only between American Indian groups and the national sample but also among American Indian groups. However, disparities varied in complex ways by distinct age-related and gendered patterns of drug use. Finally, in a study of inhalant use, Howard et al. (1999) found that inhalant use is less prevalent among urban native adolescents than in most studies of reservation Indian youth. Additionally, as with other studies of inhalant abuse, aggressive and delinquent males of low socioeconomic status (SES) and low perceived self-worth, with family histories of alcohol dependence, were at highest risk for inhalant use.

Other research has found that substance dependence has a substantially heritable component among AI/AN groups. Ehlers and Gizer (2013) conclude that the high rates of substance dependence seen in some tribes are likely a lack of genetic protective factors (metabolizing enzyme variants) combined with genetically mediated risk factors (externalizing traits, consumption drive, and drug sensitivity or tolerance) and key environmental factors (trauma exposure, early age at onset of use, and environmental hardship) to produce an elevated risk for the disorder.

Future and Emerging Research

Sexual Orientation

Sexual orientation can be considered among several dimensions including attraction, behavior, and identity. More youths report same-gender sexual attraction and same-gender sexual experiences than identify as lesbian, gay, or bisexual (Brewster and Tillman 2012). In general, research has documented that sexual minority students have a higher prevalence of drug use than their heterosexual counterparts (Newcomb et al. 2014; Brewster and Tillman 2012; Rosario, Hunter, and Gwadz 1997). This is the case both for persons who identify as non-heterosexual and for persons who identify as heterosexual and engage in sexual behaviors with persons of the same sex. Sexual identity intersects with other statuses to compound risk of drug use. For example, Newcomb et al. (2014) found that differences between sexual minority and heterosexual male students in prevalence of drug use are generally larger than differences between sexual minority and heterosexual female students. Additional findings show that even though racial minority students generally report a lower prevalence of drug use, the protective effect of African American race was less pronounced for some sexual minorities. Research should continue to unpack the contexts that give rise to higher drug use among sexual minorities, including gender nonconformance and the intersections of gender, race/ethnicity, and immigration status.

Aging Populations

As the baby boomer population in the United States ages, there is a substantial increase in the number of older adults requiring treatment for substance-use-related problems. For example, Rivers et al. (2004) found that older persons may have a higher prevalence of cocaine use than previously estimated by national registries. This will place increasing demands on treatment systems and require a shift in service delivery to meet the special needs of an older population, since older admissions to substance abuse treatment differ in important ways from younger adult admissions (Wu and Blazer 2011; Arndt, Gunter, and Acion 2005). Gfroerer, Pemberton, and Folsom (2003) found that the number of older adults in need of substance abuse treatment is estimated to increase from 1.7 million in 2000 and 2001 to 4.4 million in 2020 due to a 50% increase in the number of older adults and a 70% increase in the rate of treatment need among older adults. Similar to sexual minorities, more research is needed to understand the context of drug use for this aging population in order to develop effective treatment approaches.

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Public Safety and Public Health in a Geographic and Economic Context

Paul Draus and Juliette Roddy

Introduction

We begin with an admission: neither of us is a trained geographer. One of us is a sociologist and the other is an economist. However, we have both come to embrace geography as an overarching framework within which substance use and associated issues of violence, crime, and disease may be better understood and disciplinary perspectives harmonized. In part, this chapter is an argument for the practical usefulness, and even the necessity, of such an integrating framework. The overview that we provide cannot claim to be exhaustive. We acknowledge that some areas are neglected – for example, we focus mostly on US settings and on illicit drug use and markets, as opposed to alcohol and tobacco. The literature that we could potentially reference is vast, and we can't hope to do justice to it all. Rather, our intention is to provide a good sense of what defines a geographically informed approach to substance use research, with some illustrative examples offered along the way.

Following Barnes (2004), we contend that academic research emerges not only from the configurations of factors to be investigated, but also those that shape and direct the perspectives of researchers. The one informs the other, and that was definitely true for us. The research that we discuss below reflects a shift in geographic context on two levels. The first level is personal and professional: one of us (Draus) relocated from Dayton, Ohio to Detroit, Michigan in the fall of 2005, and soon began to shift the focus of his research to the city where he was living. Roddy, who had done her doctoral research on rational addiction and cigarette smoking using secondary data entitled *American's Changing Lives*,¹ had recently begun conducting primary research through a methadone program located in Detroit and administered by Mark Greenwald at Wayne State University. They both joined the

faculty at the University of Michigan-Dearborn at the same time, and through their association as junior faculty eventually began to collaborate on research. More specifically, Roddy introduced Draus to Greenwald and a plan was developed to conduct qualitative research on local patterns of heroin use that would complement the economic data that Roddy gathered. Out of this collaboration emerged the synthesis of economic and ethnographic methodology that has formed the basis of our approach ever since.

The other geographic context is that of Detroit itself. In a 2009 paper, Draus argued that Detroit had experienced a slow-motion social and economic disaster that was reflected in the region's segregated geography as well as the disparities in the distribution of health outcomes and drug markets. The largest city in the State of Michigan, and once the fourth largest city in the United States, Detroit has long been haunted by associations with illicit drug use and crime (Boyle 2007; Neill 2001). Below the surface of the city's bad image lies a historical trajectory driven by structural trends, a representative case for America's broader urban crisis (Sugrue 1996). Deindustrialization hit Detroit hard beginning in the 1970s, following decades of population loss due to suburbanization (Hill & Negry 1987). In the 1980s, the US federal government largely retreated from the business of maintaining cities, devolving more and more functions to local governments, nongovernmental organizations, and markets, with devastating results for poor central cities (Wallace 1990; Freudenberg et al. 2005). As the central city's fortunes declined, its metropolitan area expanded into an ever-widening band of land, which dwarfed the central city in terms of area, population, and income (Darden et al. 1987; Kasarda et al. 1997). The Great Recession intensified the impacts of these long-term trends, resulting in even higher levels of unemployment, home foreclosure, and abandonment in the central city and inner ring suburbs (Rugh & Massey 2010).

These fallow economic fields were ripe ground for drug markets. Detroit's history of illicit drug sales and use has been well documented in journalistic (Adler 1995), autobiographical (Jones 2006), and scholarly (Mieczkowski 1986, 1990; Silverman & Spurill 1977) works. Tourigny (2001) explored the impact of neoliberal welfare policies on the lives of poor families in Detroit, especially in regards to drug dealing, and Bergmann (2008) drew connections between political and economic abandonment and the creative resistance of drug-dealing youth in the same city. In all of these studies, ethnography added density or "placeness" to what otherwise might be a flat, abstract, or statistical representation of social space (McLafferty 2008). Our own work has integrated ethnographic methods with social networks and economic analysis to further elaborate the dynamics of place as it relates to drug use.

Background: Defining Geographic Context

In geography, emphasis is placed on space as being *constitutive* of social relations and behavior, not merely as a *container* for them. Human beings are essentially embodied and exist in physical relation both to each other and to a specific

environment. These surroundings not only shape that behavior, they actually make it possible. While this may seem an abstract point, it becomes concrete very quickly when we think about the location and character of cities, which often exist only because of landscape features that made them viable. Can we imagine New York or Boston existing without their ocean harbors? Could London or Paris have prospered without their river locations and the productive hinterlands that fed their populations? Likewise, could any of these cities have grown as they did without becoming seats of government and centers of commerce?

In the simplest terms, a geographic framework is employed when a spatial dimension is included in the analysis of social phenomena: considering not only *what* people do, and *how* and *why* they do it, but *where* they do it. In Gritzner's words (2002), the three central questions of geography are: "What Is Where, Why There, and Why Care?" This may or may not include actual maps, but it will always be characterized by close consideration of how specific factors come together in social, physical, or symbolic space. Furthermore, intensive study of specific human contexts tends to reveal the extent to which history and geography are knitted together. It does not take much of a leap to see that social and economic relations and behaviors are woven together within that fabric. William Cronon's book on Chicago, *Nature's Metropolis* (1991), is nominally a work of environmental history, but it is quintessentially geographic because its real concern is the dynamic interconnection of social and environmental factors within a particular window of time and space.

We propose that applying a geographical framework to substance use behaviors and associated issues of health and safety simply means that activities which occur within a particular space are best understood in organic relation to that space, and not artificially divorced from it. As we discuss below, the complex interconnection between spatial characteristics and issues such as drug use, health, and public safety has long been recognized, going back to the early industrial city. Frederick Engels' observations of working-class life in 1840s Manchester and John Snow's investigations of cholera outbreaks in the Golden Triangle section of London in the 1850s are two remarkable examples of the geographic imagination. The pioneering social mapping projects of Charles Booth in London and Jane Addams in Chicago also addressed substance use within a comprehensive geographic framework, and the Chicago School of Sociology made the community study its distinctive methodology. All of these projects involved a lot of walking, and we suspect that this is no accident. As active researchers in Detroit, one of our most revelatory methods has simply been walking through the areas of the city where we also recruit our participants.

However, in the mid- to late twentieth century the social sciences became more fragmented and professionalized. The fields of sociology, anthropology, political science, criminal justice, public health, urban planning, and others each carved out their own specific domains of expertise relative to particular "problems" such as substance use, crime, and infectious disease. The so-called quantitative revolution in geography featured the development of advanced statistical models and privileged the analysis of individual variables across broad datasets, fueled in part by the funding provided by government, in particular the military (Barnes 2008).

Similar trends affected sociology and economics as well. One outcome of this development was that the role of specific places or contexts in shaping health behaviors and outcomes was neglected or obscured (Tickamyer 2000). This also implied a distance from the subject matter that was equated with greater objectivity. The more descriptive ecological tradition persisted, but it often took the form of site-specific ethnographic studies of particular social contexts.

By the end of the twentieth century, quantitative methods had contributed to a significant literature on so-called area or neighborhood effects in fields such as sociology (Sampson, Morenoff, & Gannon-Rowley 2002) and epidemiology (Diez Roux 2001; Macintyre, Ellaway, & Cummins 2002; Diez Roux & Mair 2010). This also extended to substance use research (Boardman et al. 2001; Galea, Nandi, & Vlahov 2004; Ompad & Fuller 2005). Much of the work in this vein employs geography (or location, which is not exactly the same thing) in a rather one-dimensional way – often as a conduit for various mechanisms, such as social networks, social capital, social stress, or social support. However, the accumulation of this evidence, combined with tremendous advances in the technology that enables spatial data gathering and analysis, has contributed to the so-called “spatial turn” across the social sciences (Logan, Zhang, & Xu 2010) as well as in health research (Richardson et al. 2013). However, the twenty-first century has also seen a new interest in holistic, synthetic paradigms (Sui & DeLyser 2012).

Health, Place and Drugs

As Kearns and Moon (2002) have argued, an increasing awareness of *place* brings greater attention to the community contexts that foster health behaviors, as well as those which complicate the delivery of health care services. They discuss the applicability of the concept of “landscape” to issues of health and illness, citing “an enhanced awareness of the cultural importance of place and the intersection of the cultural and the politico-economic in the development of place-specific landscapes of health care and health promotion” (p. 610). Such perspectives emphasize the role of specific configurations of sociological variables that characterize particular places as factors that might drive or shape health or risk behavior.

Beyond understanding the contexts and meanings of behaviors, there is the task of following the trail and trajectory of the drug itself. Simply put, illicit drug use as it occurs in US cities today is incomprehensible without understanding the local and global interconnections and inequalities that form the framework for the licit and illicit drug markets, the gradients and submerged contact points that provide the impetus and channels for the circulation, or traffic, of these symbolically, economically, and politically powerful substances. Clearly, all three elements of Zinberg’s (1984) classic configuration of drug, set, and setting (Zinberg 1984) are necessary to explain complex behaviors such as substance use, but what is also needed is some connection to a larger analysis of how each element comes into being – how the drug, the set, and the setting are constituted in social space. This involves a

consideration of both the relatively static, structural determinants of social space, in terms of race, class, gender, opportunity on the one hand, and the dynamic interactions of variables within specific *places* on the other.

The recognition that, once again, “place matters” has inspired a new generation of theorists and researchers. In a sense, this brings us back to the central insights of the late nineteenth and early twentieth centuries, but with the added benefit of enhanced analytic technologies and parallel theoretical elaboration across a range of social sciences. In this chapter we will emphasize the circularity of many of these approaches within the social sciences, paying heed to the fact that we often spend much time and money learning the same lessons over and over again. At the same time, we will highlight the recognizable advances that have occurred in terms of theory, methodology, and outcomes.

In the pages that follow, we first review the history of geographic approaches to issues of crime and substance use, beginning in the late nineteenth century and continuing through the height of the Chicago School’s influence in the mid- to late twentieth century. We then delve into the realm of economics, considering how this discipline has analyzed substance use issues and how the economic perspective may inform other approaches within the social sciences. From there, we move to more contemporary accounts of substance use and public safety that emphasize complex causality within an integrated interdisciplinary geographic framework. In this section of the chapter, we will foreground some of our own research in post-industrial Detroit to illustrate our points concerning the complex interconnection of contexts and behaviors, with an emphasis on shifting assemblages of people, places, and things that collaborate to produce variable outcomes (Deleuze & Guattari 2003; Marcus & Saka 2006). Finally, we highlight some challenges and opportunities for those seeking to employ a geographic approach to substance use in research and practice, including the potential applicability of complex systems approaches (Agar & Wilson 2002) and assemblage theory (Duff 2014).

Social Science and the Nineteenth-Century City

In both sociology and economics Frederick Engels is recognized as a foundational figure. John Snow, a nineteenth-century physician who is often credited with creating the modern field of epidemiology, is usually referenced by a very different set of scholars. In an important sense, however, they were both urban geographers, examining the impacts of the urban environment at the level of the street and the block. In their work, economic, social, and environmental conditions and health behaviors are inescapably intertwined.

Engels’ *The Condition of the Working Class in England* (1844) is an up-close examination of the environmental degradation of industrial capitalism, including the impacts of substance use on communities already brutalized by poverty and pollution (Clark & Foster 2006; Page & Singer 2010). John Snow’s detailed investigations of London’s cholera epidemics involved intensive urban fieldwork and the

development of an early form of geographic information system (GIS), as he painstakingly mapped the locations of persons afflicted by symptoms within specific windows of space and time. The insights generated by his research challenged the predominant public health wisdom at the time and presaged the discovery of germ theory. As Johnson (2007) has observed, Snow's work must properly be seen as an exemplar of dynamic interdisciplinary thinking that was demanded by the complex setting of the city. Furthermore, Johnson argues that it was the city, in both physical and social terms, that made this thinking possible.

Unlike Frederick Engels, Charles Booth was not a radical; he was a wealthy humanitarian from Liverpool with a bent toward research and social reform. He funded and led a 17-year project to describe the city of London using a groundbreaking geographic framework and combining both quantitative and qualitative approaches, including what we would today call ethnographic interviews and participant-observation. Famously writing that, "It is not in country but in town that 'terra incognita' needs to be written on our social maps," Booth sought, in *The Life and Labour of the People of London* (1891, 1902) to chart the emerging social terrain of the industrial city. Booth's team walked throughout the teeming metropolis, learning from the city at nearly every level. While Booth was primarily concerned with mapping poverty, the behaviors of the poor were a major concern of his research project, including patterns of drug use and criminality.

In the concluding volume of the study, published in 1902, Booth wrote that, "Drinking habits and the disorderliness resulting from them could not but be continually mentioned in the course of the long walks taken in all parts of London day after day with the picked police officers who were permitted to assist us during the revision of our maps..." (Booth 1902, pp. 60–61). Prostitution, crime, and policing were likewise treated within the particular contexts of the different districts where they were observed. Though often colored by the moralism of his class and his era (Gidley 2000), Booth's study is both remarkably detailed and essentially holistic. He employed narrative, first-hand accounts to link empirical data of various kinds, utilizing both ethnographic and economic methods to develop a complex account of a place unlike any other, yet beset with ills that were symptomatic of processes of urbanization taking place elsewhere.

From London to Chicago

In Chicago, Jane Addams and other women associated with the settlement house movement were inspired by Booth's example and carried out similar surveys of the city's neighborhoods' social and economic conditions, especially those that bordered on Hull-House. A selection of these studies was published in 1895 as *Hull-House Maps and Papers*, and included contributions examining the sweatshop system, the Jewish ghetto, and Italian and Bohemian enclaves within the rapidly growing city. Addams' approach drew directly on Booth's, incorporating color-coded maps to show the distribution of wage levels, ethnicities, and occupations on

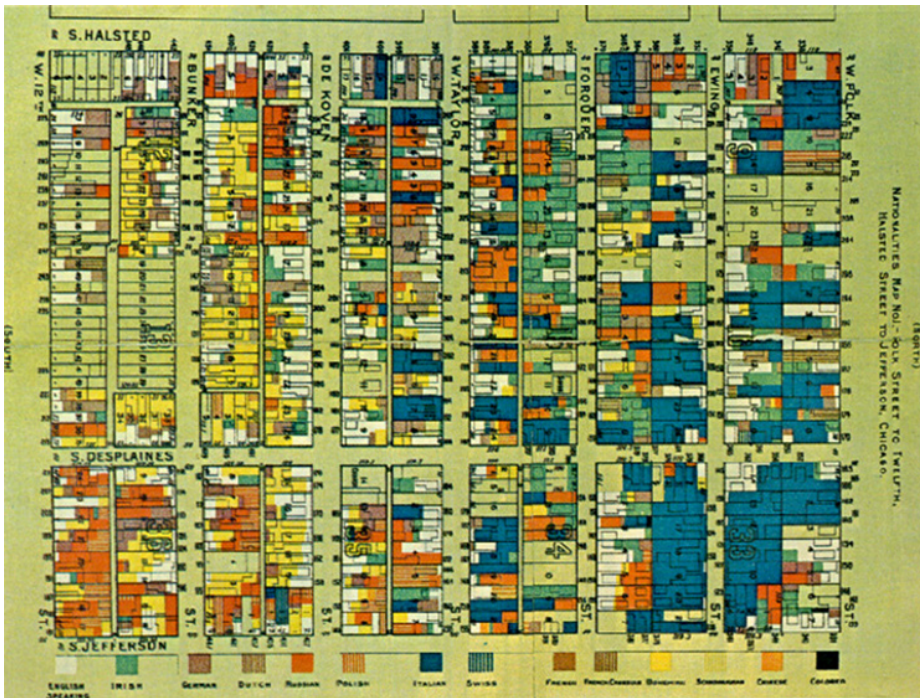


Figure 17.1 Map of the 19th Ward of Chicago. Source: Addams (1985), Hull-House Maps and Papers

a block-by-block level (see Figure 17.1) as well as first-observation, interviews and descriptive narratives.

Like Booth, Addams was primarily concerned with poverty, but could not avoid the entangled issues of crime and substance use. Seeing Hull-House's purpose as one of social reform, Addams positioned research as a tool to motivate social change as well as to inform specific policies, including those addressing substance use. Even these are treated in a manner that is thickly contextual, as revealed in this passage from her memoir *Twenty Years at Hull-House*:

Inevitable misunderstanding also developed in connection with the attempt on the part of Hull-House residents to prohibit the sale of cocaine to minors, which brought us into sharp conflict with many druggists. I recall an Italian druggist living on the edge of the neighborhood, who finally came with a committee of his countrymen to see what Hull-House wanted of him, thoroughly convinced that no such effort could be disinterested. (Addams 1912, p. 299)

The intermeshed reality of the ethnic and economic subculture of the city block with patterns of drug use and distribution, as encountered by Addams, predicts the struggles of US cities in the late twentieth century to confront nested issues of inner-city poverty and drug markets. This passage also illustrates the very different

landscape that existed prior to the passage of the 1914 Harrison Narcotics Tax Act, which regulated the importation and distribution of opiates and coca products.

While Addams and Booth were both committed social reformers who saw their research as a means to that end, the depth and rigor of their investigations influenced others within the emerging field of academic sociology. W.E.B. Du Bois, a Harvard-trained sociologist who was well versed in European social theory, integrated empirical methods, theoretical insights, and social change goals in his comprehensive study of the 7th Ward, an African American neighborhood of Philadelphia. Like Booth and Addams, Du Bois ([1899]1996) examined issues of crime and substance use in the context of the economic and social environment that surrounded and shaped them, using a range of methodologies (O'Conner 2009). While all of the above studies addressed issues of crime and substance use, in each case this was seen as subsidiary to concentrated urban poverty and accompanying spatial and social exclusion. In the case of Du Bois, it was also intimately tied to the sociology of race.

Gender and racial exclusion helped to ensure that neither Addams nor Du Bois would have had a recognized place in the history of American urban sociology, which formally took root at the University of Chicago and flourished under the leadership of Robert E. Park in the 1920s (Deegan 1990; Anderson & Massey 2001). The so-called "Chicago School" built on the foundation laid by its predecessors and Park was influenced by the same European theory that informed Du Bois. The multilayered community studies produced by the Chicago School were quite diverse in content, but they were connected by an underlying ecological paradigm that placed urban cultures within the context of specific localized settings as well as connecting them to the structure and function of the city as a whole. This paradigm is often summarized by Ernest Burgess's Concentric Diagram, which depicts the city as a series of nested zones, each characterized by different functional features that in turn influence the selection of groups into those zones, thereby shaping the lives of individuals at the level of day-to-day interaction.

Normally the processes of disorganization and organization may be thought of as in reciprocal relationship to each other, and as co-operating in a moving equilibrium of social order toward an end vaguely or definitely defined as progressive. So far as disorganization points to reorganization and makes for more efficient adjustment, disorganization must be conceived not as pathological, but as normal. (Burgess 1925)

The passage demonstrates the organic, metabolic metaphor that unifies much of the disparate work of the early Chicago School and forms the basis of their significant contribution to urban geography (Fyfe & Kenny 2005). As it relates to substance abuse, this metaphor implies that patterns of behavior that emerge within the complex space of the city are in fact not aberrations but somehow connected to the growth and functioning of the city as an organic whole. In fact, the Chicago School also contributed some of the most thorough early studies of patterns of substance use and crime within very specific geographic contexts.

Frederic Thrasher's *The Gang: A Study of 1,313 Gangs in Chicago* (1927) exemplifies the application of the organic metaphor of urban ecology while at the same time adhering to standards of empirical specificity in its granular details. As Dimitriadis (2006) notes, Thrasher "maintained that these young men were enmeshed in what he called the 'situation complex,' a web of influences that could not be understood in isolation from, but only in relation to, each other" (pp. 337–338). Though considered a foundational text in contemporary criminology, and the first book to focus on urban street gangs, *The Gang* is just as much about communities and spaces as it is about crime. Gang members, he concluded, were simply young men, many of them children of immigrants, seeking to fill the gaps that opened in the urban fabric, stretched and torn as it was by forces of social and economic change. Gangs were what he called an "interstitial element" (p. 22), offering benefits – protection, amusement, freedom, adventure – to young people that were not provided by their families, communities, or by civil institutions. Behaviors, including crimes, could not be understood apart from the social and spatial contexts in which they occurred. Local gathering spots, recreational centers, and abandoned zones all figured in the interstitial landscape that Thrasher described.

Harvey Warren Zorbaugh's *The Gold Coast and the Slum* (1929) likewise employed a geographic framework to understand the variegated landscape of Chicago's Near North Side, including the distribution of criminal activities and blighted conditions within that area. Zorbaugh's book includes a series of original maps that showed patterns of concentration reflecting the growth and evolution of the city (see Figure 17.2), as well as evocative descriptions of distinct neighborhoods, such as the Sicilian enclave known as "Little Hell":

Standing on sinister "Death Corner," in the heart of Little Hell, one can see, beyond the elevated structure and less than a mile to the east, the fashionable Drake Hotel and the tall apartments of Streeterville; while less than a mile to the south loom the Wrigley Tower and the broken skyline of the Loop. Yet Little Hell, or Little Sicily, is a world to itself. Dirty and narrow streets, alleys piled with refuse and alive with dogs and rats, goats hitched to carts, bleak tenements, the smoke of industry hanging in a haze, the market along the curb, foreign names on shops, and foreign faces on the streets, the dissonant cry of the huckster and peddler, the clanging and rattling of railroads and the elevated, the pealing of the bells of the great Catholic churches, the music of marching bands and the crackling of fireworks on feast days, the occasional dull boom of a bomb or the bark of a revolver... (pp. 159–160)

Bingham Dai's *Opium Addiction in Chicago* (1937), though less well known than other Chicago School products, is nonetheless a pioneering study that explored the relationship between neighborhood characteristics, social contexts, and opiate use in a manner similar to that adopted by Thrasher. Utilizing maps and arrest data as well as in-depth individual interviews, Dai presented complex accounts of individuals' drug-using trajectories within the spaces of the city. Dai's central claim was decidedly contextual: "no single factor, neither the social environment nor the

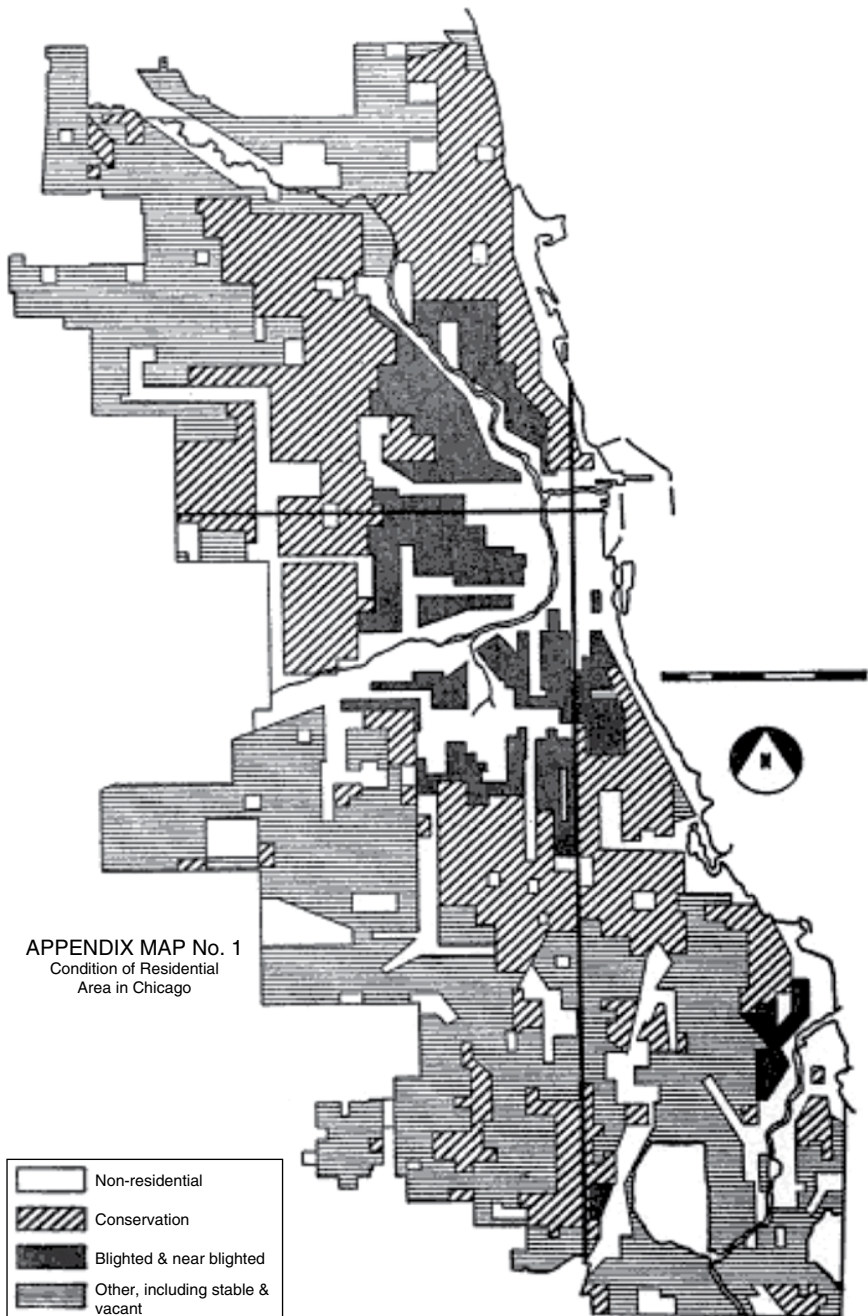


Figure 17.2 Conditions of residential areas in Chicago. Source: Dai (1937), *Opium Addiction in Chicago*

personality trends described above, could be pointed out as the cause of drug addiction. Rather is it in the interplay of social and personal factors that we can expect to find the right clues to an adequate understanding of the problem of drug addiction” (p. 175).

The 1950s and the Junkie Myth

Despite the emphasis of early sociological researchers on the dynamic interplay of individuals and environments, as the century progressed substance use behaviors were increasingly viewed in isolation from their community contexts and depicted as products of individual psychological defect or moral turpitude. In part, this reflected the construction of addiction (and the addict) as a “social problem” and a distinct category of behavior that was intensely medicalized and criminalized in the wake of the Harrison Narcotics Act of 1914 (Musto 1973; Hickman 2004). According to Acker (2001), this is when the idea of the deviant drug user became solidified in the American moral imaginary.

There were voices in the wilderness. Alfred Lindesmith (1947), for example, was a major critic of post-World War II drug policy. His case studies, like Dai’s, supported a view of addiction as a social learning process, rather than a linear outcome of either individual psychology or pharmacological effects, but place was often treated merely as backdrop. Nelson Algren’s novel, *The Man with the Golden Arm* (1949), provided a rich exploration of the social, economic, and geographic context of heroin addiction in postwar Chicago. The title character, a Polish American World War II veteran named Frankie Majcinek, lives in a working-class neighborhood on the city’s Near Northwest side. He struggles (unsuccessfully) to stay clean in a bleak environment of limited opportunities and constrictive social networks. The following passage conveys the novel’s thick and textured sense of place:

That was why, Frankie guessed, everyone from the neighborhood he knew, from the punk to himself, tried to be something different than he was. The minute some kid with an accordion began playing for pennies in a corner bar he fancied himself a musical-comedy star. If a neighborhood girl got a Loop switchboard job she considered herself a career woman. Nobody bred around Division Street ever turned out to be a cheap crook: they were all Dillingers or Yellow Kid Weils to hear them tell it. Just as though the dead wagon didn’t cart off the international embezzler as surely as it bore off the musical-comedy headliner and the crummiest stewbum who ever turned up his toes between Goose Island and the carbarns. (p. 281)

The echoes of Zorbaugh’s description of Little Hell are probably no accident, as Algren drew heavily on ethnographic works as well as first-hand observation (Cappetti 1993). However, while the book was critically acclaimed, in the booming 1950s drug addiction and poverty were viewed as the problems of deviant “others.”

The works of the Beat Generation writers also included many references to drug use, and William S. Burroughs (writing under the pseudonym William Lee) captured

the life of a New York City heroin user in exacting detail, but it was published as a pulp novel with a salacious cover and the title *Junkie: Confessions of an Unredeemed Drug Addict* (1953). Though their intent may have been to humanize addiction and to question the status quo, these depictions also played into the “junkie myth,” which happened to serve the needs of punitive policy as well. According to Michael Gossop (2007):

Like so many drug myths, the notion of the dope fiend was immediately accepted as incontrovertible fact. In some strange way, it provided a psychological satisfaction too profound to give way easily in the face of more considered evidence, and it has proved remarkably resilient. (Gossop 2007, p. 180)

The junkie was an archetypal outsider in 1950s America. However, as Schneider (2011) has demonstrated, it was precisely in this period of relative prosperity that the urban foundations of contemporary drug markets were established: “the marketing of heroin through a hierarchy of cities, the location of retail markets in inner-city neighborhoods, the concentration of heroin users in these neighborhoods, the creation of landscapes that supported the heroin trade, the interaction between economic and social disadvantage that occurred in these areas...” (p. xiii).

Indeed, Rotella (1998) draws a direct connection between Algren’s novel and the looming crisis of American industrial cities:

In the years just after the war, after more than fifty years of development and on the heels of a wartime boom in manufacturing, the industrial neighborhood order was still in full flower, but at the same time it showed signs of erosion, change, and eventual breakup under the action of suburbanization, long-term deindustrialization, inner-city redevelopment (in its early stages), expansion of the second ghetto, and the accelerating dispersal of immigrant-ethnic cultures into postwar America’s expanding middle class. (p. 68)

Schneider describes three waves of heroin use that US cities experienced in the years 1940–1985: one in the 1950s, as soldiers returned from the war and new migrants moved to US cities; one in the mid-1960s, as the children of the baby boom came of age; and another in the mid-1970s, reflecting new sources of heroin production channeled through existing networks of distribution, mostly based in poor, nonwhite neighborhoods. These waves of drug use and distribution produced a new generation of drug research as illicit drug use moved from the margins to the mainstream of American life.

Drug Use Contexts and Subcultural Approaches

Addiction research witnessed a dramatic resurgence in the 1960s and 1970s as the United States experienced major increases in both casual and problem drug use. Drug researchers, many of whom were trained as anthropologists, approached the

study of addiction in a manner similar to the way that anthropologists traditionally studied foreign cultures. Examples include Preble and Casey's article "Taking Care of Business" (1969), which drew on years of participant-observation research in New York City, Zinberg's (1972) comparison of heroin use patterns in American soldiers in Vietnam and the United States, and Agar's *Ripping and Running* (1973), based on research conducted at the Lexington Federal Narcotics Hospital.

While these studies highlighted the internal coherence of heroin-using subcultures, other ethnographies demonstrated considerable variability in drug behaviors across a range of social environments. The "street addict" profile developed by Preble and Casey (1969) differed considerably from that of the "working addicts" first documented by Caplovitz (1969). These individuals maintained routines that were similar in many respects to those of the "normal" working population, and their drug habits directly reflected their work incomes, rather than the other way around. According to Zinberg's (1984) conceptual model of drug, set, and setting, the characteristics of the drug user, or set, and the qualities of the drug were crucially mediated by the surrounding environment: "Not only the drug and the personal needs of the user but also the subtleties of history and social circumstances must be taken into account." As we have seen, Bingham Dai had made essentially the same argument nearly 50 years before.

When Patrick Hughes and colleagues sought to design interventions for an unfolding heroin epidemic on the South Side of Chicago in the late 1960s, they drew heavily on the ethnographic literature of addiction and deliberately sought to apply these insights within a geographic context (Hughes 2012). In *Behind the Wall of Respect: Community Experiments in Heroin Addiction Control* (1977), Hughes describes his team's efforts to apply street-level epidemiological methods to the control of heroin outbreaks, including the use of community members as outreach workers and the targeting of identified "copping areas." The map shown in Figure 17.3 represents an updating of Dai's approach, this time applied to the purpose of public health. While his team's efforts did meet with some success in limiting the spread of heroin dependency, Hughes acknowledges that they did relatively little to address the social and economic factors – especially the lack of jobs for young people – that made such communities susceptible to drug epidemics in the first place. This question of community susceptibility was raised even more urgently by the rise of crack cocaine.

Crack Cocaine and Social Science Research

Crack cocaine first emerged as a high-profile social problem in major urban areas of the United States in the mid-1980s (Agar 2003; Williams 1992; Golub & Johnson 1996; Hamid 1992; Inciardi 1987; Bourgois 1996; Jacobs 1999). Crack was not a new drug but a marketing innovation. Cocaine, which in its powder form (cocaine hydrochloride, or HCl) was known as a fairly expensive and exclusive drug, was suddenly made available in small, affordable units that were

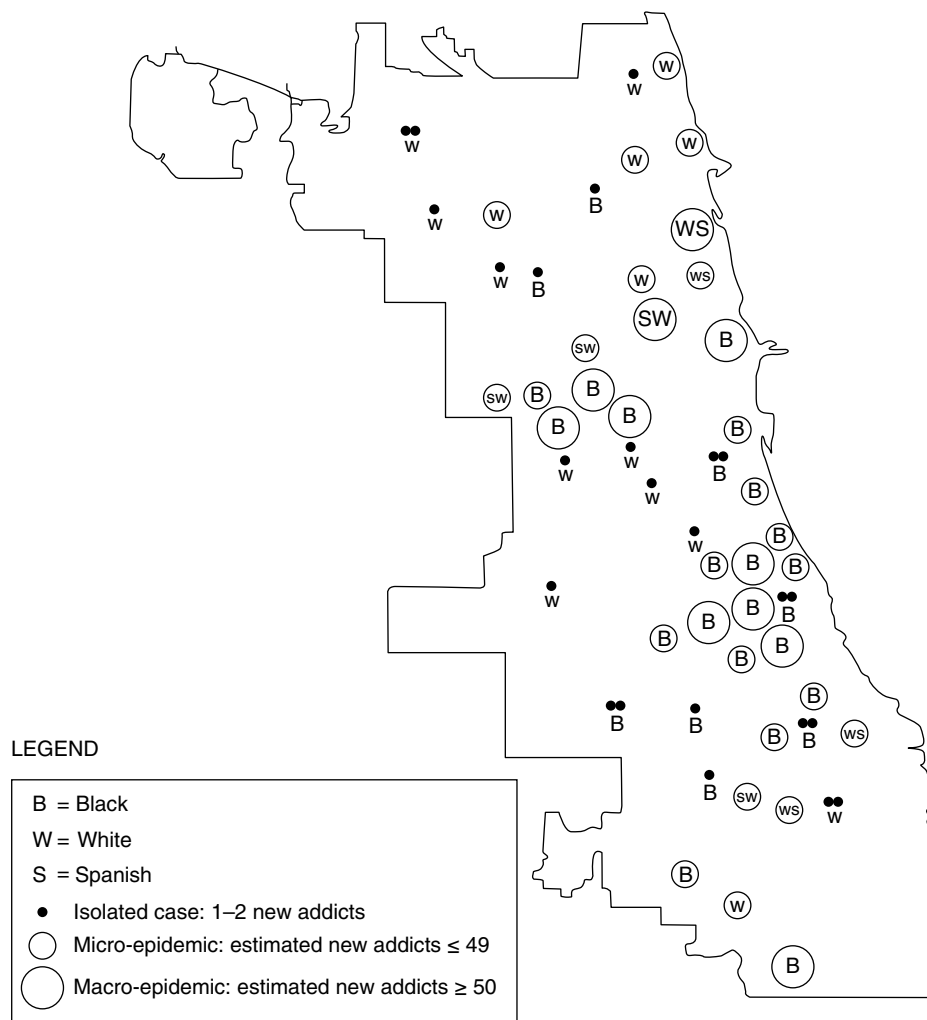


Figure 17.3 Heroin macroepidemics and microepidemics in Chicago, 1967–71. Source: Hughes (1977), *Behind the Wall of Respect: Community Experiments in Heroin Addiction Control*

smoked (Fagan & Chin 1989; Mieczkowski 1990; United States Sentencing Commission 1995). The resulting euphoria was both potent and short-lived, but the impact of crack did long-term damage, especially in poor urban neighborhoods where it compounded vicious cycles of disinvestment, unemployment, crime, and neglect (Inciardi & Pottieger 1991; Bourgois 1995).

Bourgois (1996, 2003), who described the impact of crack-cocaine markets and associated behaviors in West Harlem, placed the epidemic in the context of globalization dynamics that articulated themselves within unique geographic contexts. Washington, DC, was strongly identified with crack because the Mayor, Marion

Barry, was caught using the drug on video. That city's experience formed the basis for Lusane's (1991) argument concerning the social and economic roots of the drug problem:

The lack of economic development and social progress in these communities is not due to the drug crisis or to the purported preference among members of these communities for illegal activities, as some conservatives have argued. Yet the crisis, which grew out of the conditions that are destroying those communities, has taken on a life of its own and plays a significant role in diverting the energies and genius of many young people away from constructive activity and toward lives of self-destruction and waste. (p. 200)

The entrepreneurial nature of the crack-cocaine trade fostered its expansion into new markets nationwide and produced a wave of scholarship on the intersection of health, safety, and drug use within specific contexts. In the late 1980s and early 1990s, mass media coverage contributed to the stigmatization of crack-cocaine users and a moral panic concerning crack cocaine's social and health consequences (Ratner 1993; Bourgois & Dunlap 1993; Reinerman & Levine 1997; Humphries 1998). Though dominated by major urban areas, the research literature on crack cocaine is geographically quite diverse. While often critical of mass-media accounts (which reincarnated the "junkie myth" in the form of the "crackhead"), social science depictions also reinforced the idea that crack cocaine fueled cycles of destruction. For example, based on intensive research conducted in Dayton, Ohio, Carlson and Siegal (1991) wrote that: "the crack-using subculture has emerged with all its concomitant violence, sexual promiscuity, despair and death in other small cities across the heartland of America" (p. 19).

From Subculture to Social Structure

The crack-cocaine era also inspired intense debate among researchers concerning the relationship between drug subcultures and the larger social structure or political economy (Carlson 1996; Bourgois 2003). One critique of the subcultural approach to substance use was provided by Waterston (1993), who wrote: "Because drug users and street subculture are still presented as distinct and autonomous social phenomena, the deviance perspective is essentially maintained and perpetuated" (p. 27). Waterston, while providing similar ethnographic descriptions of heroin users' daily lives in the late 1980s, expanded her analysis to include the institutions of the city and the political economy which benefited from the persistence of illicit drug markets and the stigmatization of drug users. Seeing context solely in terms of subculture meant that one could effectively target a localized drug epidemic for intervention while leaving the structural roots largely untouched.

Agar and Reisinger (2001) and Agar and Wilson (2002) argued that drug use epidemics needed to be understood as complex systems unfolding in specific social

and historical contexts. They advanced the concept of *open marginality*, defined as a “gap between expectations and reality” that presents itself for particular groups in certain places and moments in history, creating a situation of vulnerability for marginal drug-use behaviors to spread into more mainstream populations. Presenting examples of urban African Americans in the Civil Rights era and suburban whites in the post-1970s period of Baltimore’s rapid industrial decline, they identified an “expectation–reality gap” (p. 730) that emerged due to a rapid rise in expectations, a decline in real conditions, or both. Widespread heroin use followed, in a manner analogous to an opportunistic infection or an invader species, feeding on the boredom and disillusionment of the population (p. 739). From this perspective, a heroin epidemic was less a cause than an effect of the conditions that preceded it.

In applying this theory to the crack-cocaine epidemic, Agar (2003) examined the intersection of changes in drug-supply networks, drug distribution networks, and vulnerability of populations as collaborators in a cross-national crisis that further destabilized urban communities already afflicted by poverty. Agar argued that changes in the employment and opportunity structure of Rust Belt cities such as Baltimore and Detroit combined with longstanding patterns of racial exclusion to produce the open marginality of urban African Americans. “Into this hopeless situation,” he writes, “came a new industry, one that is illegal, but otherwise represented exactly the kind of bootstrap entrepreneurial opportunity that the traditional Horatio Alger myth celebrated” (p. 22). The sudden onset of crack-cocaine use in the late 1980s and early 1990s and its negative sequelae, including increases in violence and HIV/AIDS infection had necessitated such a multileveled analysis.

Bringing Place Back in

According to Waldo Tobler’s First Law of Geography, “Everything is related to everything else, but near things are more related than distant things.” When applied to a multileveled phenomenon such as the crack-cocaine epidemic, this implied that research needed to focus both on the structural or macro-level and the contextual or micro-level, while recognizing the interplay beneath them. Acker (2010) does just this in her account of the crack-cocaine epidemic as it played out in the Hill District of Pittsburgh, as does Curtis (2003) in his multiyear study of Williamsburg, Brooklyn. Specific places were implicated in the spread of crack-cocaine use and associated behaviors, not as isolated islands but as components of the evolving socioeconomic order. At the same time, each setting was a unique configuration. This created a new challenge for researchers: that of linking the characteristics of places to the larger social structure through specific mechanisms.

By the turn of the twenty-first century, crack cocaine was still largely viewed as a drug of inner cities and racial minorities, even though levels of crack use had plateaued or declined in the urban cores where it originally took root (Johnson, Golub, & Fagan 1995; Golub & Johnson 1997; Golub & Brownstein 2012). At the

same time, crack cocaine had been integrated into the landscape of substance use and was now a reality in rural areas and small towns as well as urban locales (Draus et al. 2005). Epidemiological studies showed that the majority of crack users nationwide were in fact white, but it was not clear whether a “crack culture” had also been adopted wholesale within majority-white rural communities.

In a paper published with Carlson, Draus (2006) noted that crack-related behavior was highly contingent upon specific local “scenes,” rather than as a distinct “subculture.” Crack-related behaviors, they argued, were not simply *transmitted* along chains of association, but were *translated* within specific social spaces. In a subsequent article examining drug use in the small-town context, Draus and Carlson (2009) quoted a resident who described the constrictive combination of behaviors, networks and spaces:

See, you gotta understand the side of town I live on...anything you want to find, anything, everything's going on down there at any given moment...if you want to go get drunk you go over here, you want to go do some acid you go over here, want to do some coke go over here...I mean it's just, that's how it is...I don't know just, just fell in the group, that's what it was, me and a bunch of dudes that lived around the neighborhood just hung out and rode bicycles and got fucked up. (pp. 252–253)

The article's conclusion commented on the confinement effect produced by the combination of small social networks and geographical segmentation:

these interviews reveal that many people within small towns still live intensely local lives, and that place-bound associations actively shape their thoughts and behaviors. Though the preservation of ‘the local’ may often be presented or perceived as a positive thing in public relations campaigns, as small towns seek to rehabilitate and promote their ‘old-fashioned’ aspects, the reality of a tightly bounded social geography may be a good deal grimmer for those who are stuck in its ruts. (p. 250)

The consideration of social networks, and the associated concept of social capital, was one attempt to clarify the discussion concerning the role of place in shaping drug use behaviors and outcomes.

A focus on place also allows us to theorize about the connections between micro-level processes, such as neurobiological reactions and individual behavior patterns, and meso- and macro-level phenomena, from local social networks to community factors to structural economic change, as they occur within this particular subnational social ecosystem. Consider an individual heroin user. In every such person, there is a neurochemical event that occurs within the brain and central nervous system, which is then interpreted and experienced subjectively. However, to explain and understand this experience we need a context, which is most immediately provided by individual experience and immediate environment, social relationships, and the larger sociopolitical milieu.

Such an approach is not out of step with the scientific consensus concerning the study of complex human behavior. In *Neurons to Neighborhoods* (2000), the US

National Research Council and Institute of Medicine explored the dynamic interconnections between environmental and biological factors in early childhood development. The report argued that “It is impossible to think of the manifestation of hereditary potential independently of the hierarchy of environments that shape its appearance” (p. 40). This “hierarchy of environments” extends from the molecular level up to that of the local community or neighborhood.

However, neighborhoods are not islands. They are also linked to forces or trends that flow and ripple across cities, regions, nations, and the globe. Therefore, to properly place behavior in this “neighborhood,” we need to understand something, not only about where it *takes place*, but *what that place means*, and *how that place came into being*. Another key component of the geography of substance use is economic: the distribution of resources clearly impacts both the availability of substances across areas and the decisions of users within them. In the next section, we take a bit of a detour to consider the contribution of economics to the study of substance use and the role of specific places.

Economic Approaches to Drug Addiction

Though often depicted in moral or biological terms, and subjected to legal or medical oversight, illicit drugs are also tangible physical commodities that command a price and actively mobilize buyers and sellers across multiple geographic scales (Pearson & Hobbs 2001). Economists therefore treat drug addiction as they treat any other human behavior. From an economic perspective, individuals are rational in that they pursue transactions, activities, and consumption based on utility. It is generally assumed that the consumption of any good increases utility. If this were not true, one would not choose to consume the good. Furthermore, human behavior is motivated by incentives and therefore it can be modeled.

Economists model purchasing by developing a utility function that is subject to an income constraint. The utility function can take many forms; however, it is standard practice that consumption of market goods increases utility, though often at a decreasing rate. In other words, each unit of market good contributes positively to utility, but each successive unit contributes less utility than the unit before it. Furthermore, the purchase of the good is subject to an income constraint. No matter what goods are included in the utility function and no matter how much utility they contribute, an individual cannot purchase more in goods (price \times quantity) than they earn in income. Economists model the consumer as a utility-maximizing actor, subject to an income constraint.

Economic analysis of individual behavior always begins with a utility function. Individual utility functions mathematically model the acquisition of satisfaction (utility) by an individual and this implies the consumption of market goods – although certainly there are a number of noteworthy non-market goods that provide utility.² As goods are consumed, satisfaction increases. The argument about whether drug use enhances individual well-being has been long settled. Whether you believe

that drug users are misinformed about the harm that drugs produce, myopic and unable foresee the eventual harm that drug use may lead to, or rational utility-maximizers who may experience learning and regret, only the mathematics change. The logic is irrefutable. Rational consumers engage with goods that make them better off. Human beings do not give something up (money) unless they benefit, and drug use can be expensive.

It may be tempting to treat addictive substances as a special economic good – one that might defy the law of demand that dictates an inverse relationship between quantity demanded and price. However, economists have modeled consumption of addictive goods, sometimes called economic bads, with several different theoretical models and all have shown evidence of the negative impact of price on consumption. Each model defines price broadly in order to encompass money and time costs as well as the risk of legal and health complications. Three different models help clarify the economic approach to addiction.

The traditional consumption model

If economic models treat addictive goods simply as consumptive goods, the model would show no inter-temporal dependence between price and purchasing. Neither future nor past price increases would impact current purchases. Nonetheless, current price would negatively impact current consumption. Consumption of addictive goods would only depend on current circumstances. The model is dissatisfactory for that very reason. Common knowledge suggests interdependence between today's purchasing and consumption of the drug in the past and future. Current and future consumption takes place due to the addictive property of the good. After an initial use period of use – which may vary in duration or intensity depending on other social and biological factors – consumption continues and even escalates. Those who have consumed more in the past are likely to consume more in the future.

The myopic consumption model

Some economists (Pollak 1970, 1976; Houthakker & Taylor 1970) have modeled the consumption of addictive goods as myopic demand. This approach allows past decisions to influence current behavior; however, the consumer is blind to the future. The utility function includes current consumption and past consumption as inputs as well as other non-addictive market goods. This type of model also allows past prices to influence the current period's demand for the addictive good. In other words, if the addictive good were cheaper in the past, more would have been consumed in the past and current demand would increase, because current demand is influenced by past demand. There is inter-temporal dependence between past prices, past consumption, current prices, and current consumption.

The rational consumption model

Economists consider a consumer rational if the consumer takes into account all available information and proceeds with a decision that maximizes that consumer's utility. Drug addiction can be considered a rational response (Becker & Murphy 1988; Iannaccone 1986). Initiation of use could be undertaken when a consumer believes that the probability of addiction is low, the probability of negative health outcomes is low, or that there are few other alternatives that generate a higher level of utility. Because future costs must be discounted back to a current value, the probability of the event combined with the discounted value of the cost can be valued at less than the utility gained from use. The marginal utility of current consumption exceeds the marginal costs associated with use and the consumer is incentivized to engage. The rational model allows for past price, past consumption, future price, future consumption, and current price to influence the decision to consume an addictive drug today. Several empirical studies offer evidence that consumption of addictive goods is rational (Winton 1980; Chaloupka 1990; Grossman & Chaloupka 1998; Waters & Sloan 1995).

The role of geography – a piece of price

The three models listed above rely on utility maximization in order to derive structural demand equations. The structural demand equations combine price in all its allowable forms – past, present, and future – as an independent variable that has some significant impact on demand. In each of these models geography plays the same role. Geography is often not a complex variable in economics. It is measured as distance or location. When geography is treated as distance, it is an extension of price. Price is higher for consumers who are located further away from their dealer. A higher price dictates that consumers would purchase less. Therefore, those who are located closer to the dealer and experience greater access would consume more. This simple interpretation accounts for the cost of travel.

The expense of drug use comes in many forms. Geography or, more accurately, location can also be a proxy for risk. There is more risk in transporting illegal substances a greater distance than transporting substances a shorter distance. Again, even when location is entered into the demand equation as a proxy for risk, it is interpreted as an impact on price. More risk implies that purchasing is more costly and that would negatively impact the amount purchased. Specific units of narcotics carry a price, health loss can be equated with increased depreciation of a fundamental individual asset, income-generating activity can suffer, the threat of arrest can be considered part of price, and social stigma can certainly be costly. The price of a unit purchase of drug must take into account price, risk, purity, and travel.

Geography therefore plays a fundamental role in the price of the drug. If the place where drugs are sold is far away, the price of the drug is higher. If the place where the drugs are sold is “riskier,” the price of the drug is higher. These attributes encompass

the history, place, location, and complex system characteristics in one variable that is inevitably integrated into a mathematical model.

Place, capital and drug use

In other disciplines, geography is often interpreted as a more complex variable than distance, travel cost, or risk. As we have seen, geography can be interpreted as place, a concept that is inclusive of social contexts and beliefs that influence health behaviors. For instance, neighborhoods with low economic opportunity, poor-quality schools, and low social capital produce less health, at least according to standardized outcome measures (Grossman 1972). Often, place or geography is associated with social capital or human capital. The society that exists within a certain place has a stock of resources or responses used to thwart or enhance external stimuli.

Geographic locations with an increased level of social capital may show lower disease rates and higher conformity to prevention and other health habits. In economics, this is interpreted as a capital stock variable. Individuals are endowed with a certain amount of capital stock and they can build capital. Human and social capital is intangible; however, it can be thought of as a set of skills or processes that can enhance the production of desirable states or circumstances. For instance, if an individual is experiencing stress, there are a number of ways to counter that feeling and reduce anxiety. The method that an individual chooses depends on resources and efficiency. Some individuals will choose to smoke a cigarette, because they have built a capital stock that makes this method instantly gratifying. That capital stock was accumulated through past consumption. Another individual might fight stress through exercise. Again, their capital stock allows for efficient relief in this particular manner.

Place also influences the production of capital stock. If an individual resides within an area where exercise is encouraged, it is more likely that this will be seen as an efficient method of producing capital that will help enhance the manufacture of stress relief. If social circumstances dictate that smoking cigarettes, drinking alcohol, or using substances is the preferred method of stress relief, an entirely different form of capital accumulation is undertaken. However, unless a study specifically seeks to model human capital accumulation, economists consider this role of geography an exogenous or latent variable and it is not explicitly accounted for in the structural demand equations. In other words, the incidentals associated with place – its role in the accumulation of human capital – are considered part of the error or unexplained variation in demand.

Economics and Geography of Drug Markets

Moving beyond the level of individual behavior, economists can explain the geographic concentration of drug use in urban settings by discussing distribution routes. Port cities such as New York, Chicago, and Miami have long associations

with illicit drug trafficking for the simple reason that they are central to transportation networks. Concentrated disadvantage in some areas can also contribute to the diffusion of drug use to other areas. An edited volume published by the Urban Institute (Harrell & Peterson 1992) explored the relationship between drugs, crime, and social isolation, showing that a relatively small number of deindustrializing cities (New York, Philadelphia, Chicago, and Detroit) accounted for the lion's share of severely distressed households in the United States (Kasarda 1992).

The convergence of factors in these communities, combined with the wholesale abandonment of such areas by federal and state government, contributed to what Wallace (1988, 1990) called a "synergism of plagues," including AIDS, violence, and tuberculosis. Wallace and Wallace (1998) argued that this policy-driven community destruction also produced the pre-conditions for epidemic drug use. Inner-city drug markets, they maintained, took root where other roots had been ripped loose. Other scholars (Singer & Clair 2003; Singer et al. 2006; Freudenberg et al. 2005) employed the concept of "syndemic" to capture the tight interrelationship between AIDS, substance abuse, and violence, all of which they trace back to structural causes such as poverty, racism, and sexism.

Though drug research tends to be dominated by urban concerns, reflecting the concentration of drug markets in metropolitan areas, others have explored the dynamics surrounding drug use in rural and suburban contexts. For many people, the recent success of the television series *Breaking Bad* has also highlighted the significance of the American Sunbelt and border region in understanding the development of new drug use trends. Garcia (2010) has explored heroin addiction in relation to the landscape and the history of loss among the Spanish-speaking people of rural New Mexico, where heroin use is largely contained and transmitted within close familial relations. As discussed above, Draus and Carlson (2006, 2007, 2009) reported both parallels and significant variations between patterns of crack cocaine and heroin use in rural Ohio and those evident in much of the urban-based research literature.

If we consider research on alcohol, tobacco, and pharmaceutical use, the range of geographic locations grows much broader. Studies of methamphetamine tend to be more focused on rural areas, including the specific geographic characteristics that lend themselves to methamphetamine synthesis, distribution, and consumption patterns (Sexton et al. 2006). Despite commonalities across cases in terms of drug-supply chains and susceptible populations, we maintain that every place, like every epidemic, represents a unique configuration of factors. While the Community Epidemiological Work Group has a long history of documenting local variation in drug use patterns and trends, these have been dominated by quantitative measures and ethnographic descriptions. However, drug research has recently responded to the spatial turn with an innovative integration of geographic, quantitative, and ethnographic approaches (Thomas, Richardson, & Cheung 2008). In the next section, we focus on our own work in Detroit as an example of the geographically informed approach that we have adopted in our own research, influenced by applied researchers such as Trotter (1999), Cromley (1999), and others.

Heroin and spatial mismatch

In a series of papers written collaboratively from 2010 to 2012 (Draus, Roddy, & Greenwald 2010a, 2010b, 2012), we integrated ethnographic interviews, economic questionnaires, and external sources such as local media and law enforcement reports to examine the relationship of heroin users' mobility patterns to the segregated geography of Detroit. In each case, a geographic framework allowed us to draw connections between our economic and ethnographic data and structural conditions manifested in local contexts and settings. For example, we examined the ethnographic accounts of heroin users' daily routines, including their mobility patterns, income generation strategies, and drug purchasing practices, in combination with extensive economic inventories to characterize the symbiotic relationship between heroin use and contingent labor markets, itself a reflection of the long-term process of deindustrialization and accompanying deficit of employment opportunities (2010a). We concluded that "the behaviors and experiences described by our sample of daily, subsistence-oriented heroin users represent points on a continuum of economic uncertainty and social insecurity, not discrete types within an isolated, marginal 'subculture'" (p. 860).

As noted above, Detroit's sprawling suburban region is characterized by stark racial segregation. This has also been accompanied by a stigmatization of the city as a whole, a spatial marginality which we saw reflected in the everyday life accounts of individuals living within poor neighborhoods where they were further confined by heroin addiction and its daily demands (Draus, Roddy, & Greenwald 2010b). While researchers had extensively examined the impact of segregated sprawl on access to jobs and other opportunities (Stoll 2005; Kneebone 2009), little had been written on geographic differences in access to illicit products and criminal opportunities. We found that an effective reversal of spatial mismatch (Draus et al. 2012) existed in relation to heroin use, with African Americans and city residents reporting easier access to heroin in terms of both time and distance, which were reflected in effective price. This spatial and racial advantage in accessing illicit opportunities, however, both derived from and effectively entrenched their relative isolation and marginality within the larger metropolitan geography.

Prostitution, drugs, and moral geography

Our research on Detroit heroin users reinforced the idea that the surrounding environment, including not only the immediate context but the regional geography as well, was crucial to understanding the behaviors and outcomes related to substance use. Therefore, as we collaborated on our next project proposal we incorporated social geography into the research design from the outset. Building on the framework of qualitative interviews, social networks and daily routines, and economic inventories, we sought to understand the trajectories of former street sex workers with histories of substance abuse, both in terms of the spatial patterns of substance

use and prostitution in Detroit and the environments that women entered as they pursued the goals of recovery (Roddy, Draus, White, & Asabigi 2013).

In our analysis of women's accounts of life on the street, we drew on Hubbard's (2012) concept of *moral geography* as set of "assumptions about what behavior belongs in which particular places" (p. 34). The literature on prostitution showed that sexual practices are distributed and constituted unevenly across urban space in ways that reflected the confluence of legal and moral norms, as well as racial, ethnic, gender, and economic boundaries (Cohen 1980; Symanski 1981; Slater 2010; Powell 2009; Brock 1998; Weitzer 1999). Symanski (1981) argued that public prostitution was a manifestation of both gender hierarchies that operate and the spatial and legal practices of the state, most notably zoning and policing. These perspectives highlight territoriality, or the claiming and negotiation of geographic space, as a key element of urban life (Sack 1986). Territorial behavior may provide a crucial link between the structure of society and the spaces in which human beings live and act (Storey 2012).

The interaction of urban space with behaviors that the larger society deems either illegal or immoral is also a key theme in the history of substance use and abuse, and the siting of illegal and stigmatized street activities such as prostitution is also influenced by ecological factors that facilitate them (Duis 1983; Spillane 1998; Cohen 1980). In the case of prostitution in Detroit, we identified three types of social spaces that were discussed by participants in our study: the street, the stroll, and the spot. We focused on processes of negotiation and mobility patterns that occurred within and around these spaces. Our findings highlighted the agency of sex workers, limited and constrained as it was both by individual and environmental factors (Draus, Roddy, & Asabigi 2015).

Likewise, in examining the process of women's recovery, we have considered the social spaces of treatment centers and their position within the landscape of Detroit. While recovery narratives emphasized the expansion of opportunities, we found that social networks and geography were still highly constrained. This spatial and social limitation was seen as the price of increased options and enhanced quality of life in the long run (Draus, Roddy, & Asabigi 2014). For those women who did experience significant shifts in income and opportunity, this was often accompanied by greater mobility and economic range. At the same time, those placed within neighborhoods dominated by drug markets and networks faced additional challenges. Overall, the findings suggest that individualized programs of therapy that do not address issues of geography, both in terms of social context and in terms of mobility, will be limited in their effectiveness.

Black, white and shades of gray: Marijuana, race and the policy landscape

In this ongoing research study, we consider the impact of evolving medical marijuana legislation on use and purchasing practices across the Detroit metropolitan region. Marijuana is somewhat of an exception to the patterns of illicit drug use and distribution that we have observed in our other studies, as supply and demand

centers are more evenly distributed across the social landscape. In the Detroit context, this means that both whites and African Americans are involved in distribution as well as use. For heroin and cocaine, as we have discussed, retail distribution tends to be concentrated in the core city in lower-income predominately African American neighborhoods, though users' networks clearly extend throughout the region and supply chains stretch across continents.

However, though the use and sale of marijuana are much more evenly distributed spatially, the patterns of use are divergent. Early observations suggest that recent policy changes have sharpened these divisions, rather than erasing or blurring them. In particular, we have found that African American urban marijuana smokers are much less likely to pursue the process of obtaining legal certification (based on medical criteria) and are more likely to be suspicious of the medical certification process as well as medical marijuana itself. With the important exception of those employed in areas such as health and education, who are wary of being publicly identified, white users are much more likely to comply with the letter of the law, though in fact they may be using marijuana not for medical but for recreational purposes.

African American users, on the other hand, are much less likely to adopt medicalized language. As this research goes forward, we anticipate that the racial and spatial geography of the region will be a key factor to consider in evaluating the benefits and risks of the policy, in terms of both health and legal outcomes (i.e., arrest and incarceration). A recent study by the American Civil Liberties Union (ACLU 2013) showed that arrest rates for marijuana are starkly dichotomous, with African Americans three to eight times more likely to face legal charges related to marijuana, depending on the state or region where they live. While the softening of punitive approaches to marijuana might promise to ameliorate this trend, we contend that this is highly contingent on local factors.

A swiftly shifting city: Landscape and social change in Detroit

Finally, we have moved toward a model of neighborhoods as complex systems, seeing them not as static entities either exerting causal force downwards or being molded from above, but as sets of spatial practices and shifting assemblages of people, institutions, buildings, and commodities in varying stages of fluidity or territorialization (Duff 2011 2014; Draus, Roddy & Asabigi 2015). Much attention has been paid to the strong correlation between neighborhood characteristics and a wide variety of issues, including substance abuse, physical and mental health, crime, and youth violence (Boardman et al. 2001; Ross & Mirowsky 2001; Browning & Cagney 2002; Freudenberg et al. 2005; De Coster, Heimer, & Wittrock 2006). However, little is known about the mechanisms that operate at the local level.

In this work, we seek to describe both the objective and subjective impact of the landscape–community relationship – actual environmental changes brought about through new agricultural development and other land uses, shifts in residents' ideas or perceptions of the changes taking place, as well as behavioral changes that occur

within and around these spatial changes. We may capture this by recording granular changes within the evolving urban landscape, taking measures of street-level human activity as well as impacts on particular sites and their correlation with other natural and social indicators that can be aggregated spatially. Utilizing ethnographic and economic methods in combination with spatial data analysis, we propose to capture both objective and subjective dimensions of the landscape–community relationship, including: (1) measurable physical, environmental, and economic changes related to new development and land uses; (2) observable behavioral changes that occur within and around these spatially clustered changes, including substance use and crime rates; and (3) shifts in residents’ ideas or perceptions of environment or place over time.

We focus on three different neighborhood areas where changes are being driven by diverse constellations of institutional and grassroots actors. We hypothesize that the success of land use strategies to achieve goals of social and ecological sustainability depends upon the interface between the trajectories of residents within neighborhoods and these various actors. Where residents’ subjective sense of a neighborhood’s direction (toward decline, recovery, or balance) aligns with the goals of these actors *and* the observable evidence of changes in the physical environment, we expect to see the emergence of dynamics that may become self-perpetuating as both internal and external factors reinforce each other, with accumulating benefits in terms of social cohesion and population health. Early ethnographic explorations reveal a deep sense of doubt and distrust among poor Detroit residents concerning the intentions of proposed development projects or their likelihood of success (Draus, Roddy, & McDuffie 2013). However, data collection for this project is ongoing and the social and physical landscape of the city of Detroit is rapidly evolving. The outcome of this approach will be a multilevel model of urban landscape transition as it relates to both natural and social systems and behaviors within specified zones of transition.

Conclusion: Back to the Future

The history of US cities reveals a complex relationship between the natural world and social systems, resulting in a negotiated order that Gandy (2003) has termed metropolitan nature, and which Swyngedouw (2004) describes as a socio-ecological cyborg. In its twentieth-century form, this order relied heavily on industrial inputs allowed by increasing populations and advanced technology, often funded through mechanisms that were based on the assumption of continuous economic growth. With the advance of deindustrialization in certain sections of the United States and the continuing loss of jobs and population to other regions or countries through globalization, many of the assumptions underlying the twentieth-century model of urban planning have been undermined (Ryan 2012). As these cities move into the twenty-first century, a new balance of human and natural systems is emerging. Ongoing depopulation and abandonment, a proliferation of urban agriculture and

forestry, and large-scale development projects are reshaping the physical face of the postindustrial city in dramatic ways. Throughout the global South, rapidly growing cities raise an even more pressing set of challenges related to both environmental sustainability and social inclusion (Davis 2007). Questions related to substance use cannot be separated from this shifting terrain.

As we have seen, it is impossible to understand shifts in drug use patterns or their varying consequences without considering the role of history and geography in shaping susceptibility and building resilience (Draus 2009). It is time that we recognize that substance use itself is as much a part of the fabric of contemporary life as the production and consumption of other commodities such as food and petroleum products. As with those commodities, psychoactive substances bring with them particular benefits and burdens which unfold unevenly across fluctuating fields of space and time. What is needed now is a flexible, interdisciplinary approach which may capture a range of social (including political and economic) factors and forces and their cross-cutting interactions as well as their direct impact on place-based beliefs, behaviors, and outcomes. In a sense, this brings us back to where we started, with the work of people like Booth, Addams, and the Chicago School. We therefore conclude with a reaffirmation of our central point: that environment and geography must be fundamental components not only of substance abuse research and analysis but of practical intervention.

Notes

- 1 House (1986, 1989, 1994, 2002).
- 2 A classic non-market good is clean air, although certainly there is a market component to locations with high environmental quality.

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Part VI

Drugs and Adverse Social
Experience

Drugs and Violent Crime

Henry H. Brownstein

Theoretically, historically, and culturally there are good reasons to believe that there is a discernible and meaningful connection between violent crime and involvement with illicit drugs or with the illicit use of lawful drugs. Over the years social, behavioral, and biological researchers have found evidence to support the existence and validity of that nexus. But at the same time their research has demonstrated that the nexus linking drugs and violent crime is neither simple nor direct. This chapter is about the relationship between drugs and violent crime. It defines what is meant by violent crime, discusses how and why it is reasonable to acknowledge a relationship between drugs and violent crime, and then considers what research has found and consequently where there is consensus about what is known and what is not known. It concludes with a discussion about how this knowledge or lack of knowledge informs or misinforms public health and safety responses to personal and social involvement with illicit drugs.

The Meaning and Measure of Violent Crime

It is not tautological to say that violent crime is a form of violence. Not all crime is violent and not all violence is criminal. To understand how drugs may or may not be related unambiguously to violent crime it is first necessary to understand what violent crime is, how it is distinguishable from other forms of violence, and how it is measured. In this chapter the focus is specifically on the relationship between individual and community involvement with drug use or trade and violent crime.

From a strictly legalistic perspective crime is simply the violation of a legal code (Tappan 1960). But as Gwynn Nettler (1974) argued in his classic explanation of

crime, crime is better understood as a moral concept and more broadly refers to those behaviors and actions that result in one person or collective of individuals doing harm to themselves or to others. He wrote:

In its legal sense, crime refers only to those injuries condemned by the criminal code of a state and prosecuted by a government. Because there are so many possible wrongs and because crime denotes only a select sample of all disapproved acts, the definition of crime varies from time to time and from place to place, and there is continuing controversy about what should and should not be called crime. The laws and morals that dictate which wrongs should be dealt with as crimes are themselves under challenge in changing societies. (1974, 3)

In a social sense then, violent crime refers to those behaviors and actions that cause harm that encompasses violence.

In writing about the difficulty of trying to understand violence, Graeme Newman recognized various forms through which violence can be manifested in social experience. He suggested a range of forms “from political violence, through the violence of occupations, criminal violence, violence in the home, to the violence of those who are sick, and many other different forms of violence” (1979, 5). On a theoretical level Georges Sorel argued that violence can be explained in terms of outcomes related to conflict between social classes (1950). Going a bit further, Hannah Arendt (1969) suggested that while outcomes considered violent may be related to class conflict, they are more broadly appreciated as means by which people justify their actions in relation to their objectives. While these definitions explain the reason for violence, they do not give meaning to violence as a social phenomenon. On a more substantive level violence has been defined in terms of the specific conditions or characteristics that distinguish it from other forms of social action or behavior. For example, Weiner and his colleagues defined it as “the threat, attempt, or use of physical force by one or more persons that results in physical or nonphysical harm to one or more other persons” (Weiner, Zahn, and Sagi 1990, xiii). Similarly Newman defined it as “the use of force to gain dominance over another or others” (1979, 1) and Reiss and Roth as “behavior by persons against persons that intentionally threatens, attempts, or actually inflicts physical harm” (1993, 2). Focusing on how members of society interpret observed action or behavior rather than the action or behavior itself, Brownstein concluded “forms of social activity that we consider violent are those that in our judgment symbolize and represent physical force and domination” (2000, 7).

In summary, criminal violence or violent crime in particular can be defined as social behavior or action that violates an established and recognized legal code and through which an individual or group of individuals causes harm to themselves or to others in a way that is recognized to involve physical force and social or psychological control. Unfortunately that conceptual definition does not easily translate into the definition of measurement of crime or the ability of authorized agencies to define or measure it for operational or even statistical purposes.

In the United States, for example, crimes are officially classified as violent by the Federal Bureau of Investigation (FBI) for its Uniform Crime Reports (UCR) program. For purposes of this program the FBI defines violent crime as one of four legally defined offenses (murder and non-negligent manslaughter, forcible rape, robbery, and aggravated assault), each of which is recognized as involving force or the threat of force (United States Department of Justice, 2013). On the state level in the United States every state has its own legal code but all participate in the UCR program and submit state statistics and reports to the FBI on crime in the state, including violent crime. But each state can have its own categories of crime that it classifies as violent. In New York State, for example, some offenses not necessarily considered violent crimes by the UCR definition are recognized as violent crime in the state, such as weapons offenses and other sex offenses.

Once violent crime is defined, in order to be able to determine the nature and extent of its relationship to drugs and the outcomes or impact of that relationship it is useful to be able to measure it. Individuals as members of a legally established community determine not only what is to be considered violent crime but how it is to be counted and how to calculate its scope and impact. The understanding of violent crime and the appropriate response to it will be a product of how it is measured.

Official statistics are those “that governments produce, finance, or routinely incorporate into their decisions” (Starr 1987, 8). In the case of crime statistics they are produced from data provided to authorized local, state, and federal government agencies by criminal justice administrators and law enforcement practitioners. In turn these agencies produce counts and analyses of the data and disseminate them to interested parties. In the United States, as noted above, the primary source of such statistics on the national level is the UCR. The UCR is an incomplete measure of crime since it only compiles reports from local law enforcement agencies about crimes known to the police and arrests made by police. So the US government has an independent measure of crime in terms of reported victimizations. These victimization data are collected by the US Bureau of Justice Statistics (BJS) through the National Crime Victimization Survey (NCVS), which is a national household survey of respondents age 12 and older designed “to produce national estimates of the levels and characteristics of criminal victimization in the United States, including crime not reported to police departments” (Langton, Planty, and Truman 2013, 11). Similarly in England and Wales crime data are collected and crime statistics and trends reported inclusive of incidents of antisocial behavior and other transgressions recorded by the police and surveys of households and resident adults (Office for National Statistics 2014).

Police records and survey data combined do provide a more comprehensive estimate of the level and nature of crime in a jurisdiction. But invariably there is a discrepancy between the number and type of crimes reported by the official police accounts of crimes known and arrests made and the self-reported accounts of victimization by individuals (Blumstein, Cohen, and Rosenfeld 1991, 1992; Eck and Riccio 1979; Hindelang, Hirschi, and Weis 1979; Skogan 1974). Nonetheless, they are a measure of criminal activity and have been used to study crime, and in particular violent crime, and its relation to other forces and factors, including drugs.

Drugs and Violent Crime: History and Culture

While a link between drugs and violent crime might seem logical and arguable in contemporary societies, it has not always been that way. The argument that there is a nexus between drugs and violent crime has evolved over time and is grounded not only in science and theory but also in culture and ideology. So even today it is not a simple argument to make and is not made the same way by all people who make it.

Aldous Huxley wrote, "That humanity at large will ever be able to dispense with Artificial Paradises seems very unlikely. Most men and women lead lives at worst so painful, at the best so monotonous, poor and limited that the urge to escape, the longing to transcend themselves if only for a few moments, is and has always been one of the principal appetites of the soul" (1954, 62). So it is not surprising that one or more of the countless pharmacological substances we call drugs are and always have been part of social experience. In different societies and different cultures across time and space people have used drugs for reasons of personal health or well-being. In some cases they have used drugs to treat their own physical or mental frailties and in other cases simply to address the routine pains and stress of living everyday life.

In the United States, for example, as recently as the late nineteenth century drugs including cocaine and opium were widely available as home remedies for use by people seeking to relieve the pain or other symptoms of illness (Inciardi 2007; Musto 1991). During this period a new soft drink called Coca-Cola offered consumers a boost from the extracts of coca it contained, the Bayer Company introduced a new product called Heroin to treat coughs and chest ailments, and individuals could purchase hypodermic kits from the Sears Roebuck catalogue to inject morphine to treat personal pain. Writing about this period in the United States, David Musto called it "an era of wide availability and unrestrained advertising" (1991, 42).

In part the easy availability of drugs and limited concern about how drug use or involvement might relate to other outcomes in the United States were the consequence of the lack of centralized national control over drugs, with each state having its own authority. In some other nations there was more coordination under more centralized control but even then there was not much concern about possible negative outcomes of drug use or involvement until the early twentieth century. By the early 1900s in the United States and other nations concern was growing about the dangers that might be related to drugs but there was only limited consensus. For example, some people and organizations, including the medical and health care communities, focused on problems associated with individual and public health, while others including the criminal justice communities focused on the dangers related to crime and public safety (Inciardi 2007; Musto 1999, 1991). But whatever the focus of concern, there was concern and the underlying theme of it was the dangers to, and perhaps more important by, certain people involved with certain drugs.

As concern about the dangers of drug use grew during the early years of the twentieth century, in the United States various agencies of the federal government

sought to centralize responsibility that until that time was the province of the states. Working through its authority over interstate commerce, in 1906 the Pure Food and Drug Act was passed establishing federal standards for quality, packaging, and labeling in the sale of patent medicines (Musto 1991,43). More directly, in 1914 the US Congress passed the Harrison Act and in 1937 the Marijuana Tax Act, in both cases using the taxing authority of the federal government to gain control over the production, importation, sale, purchase, and distribution of particular drugs, including narcotics and marijuana (Kaplan 1971; Musto 1999; Smith 1988). In support of these efforts to gain control over the trade and traffic of particular drugs the argument was being made that certain drugs related to crime and violence (Inciardi 2007; Kaplan 1971). So at a time when the economy was unsettled and crime and violence were increasing, in 1930 the Federal Bureau of Narcotics (FBN) was established and under its longstanding commissioner, Harry Anslinger (1930 to 1962) drugs such as heroin and marijuana and the people who were involved with them were demonized as criminal and violent (Inciardi 2007; Kaplan 1971; McWilliams 1990).

Against this backdrop, in 1971 President Richard Nixon formally declared a War on Drugs, and in 1973 he created the Drug Enforcement Administration (DEA) in the US Department of Justice (Inciardi 2007; Weisheit 1990; Wisotsky 1986). When Ronald Reagan became president he recommitted the US government to the war on drug crime and criminals, setting the foundation for President George H.W. Bush and the US Congress to pass the Anti-Drug Abuse Act in 1988. Under that Act the Office of National Drug Control Policy (ONDCP) was created and with it the office a “drug czar” to lead the battle against drugs and drug trafficking. Each year since, the ONDCP has produced and published a national anti-drug strategy consistently emphasizing prohibition and control of drug offending and offenders (ONDCP 2013).

Notably, while the United States was focusing its attention and policy on prohibition and control over drug crime and criminals, a number of other nations were more concerned with the harms to individual and public health and safety that were the consequences of involvement with particular drugs. In the Netherlands, for example, there was attention to managing the production and trafficking of drugs but the focus was on reducing the health risks related to drug use and the treatment and rehabilitation of users having problems with drugs (van Laar et al. 2011). And in the United Kingdom the focus was on harm reduction going back to the 1920s (Bennett 1988). On an international level, in 1909 there was a meeting of 13 nations in Shanghai for the International Opium Commission (Musto 1991). There were no binding decisions made or treaties signed at that meeting but in 1911, 12 nations met in The Hague and each agreed to enact a national policy to control narcotics trafficking. In the later years of the twentieth century, three international Conventions were negotiated through the United Nations that ultimately favored prohibition and criminalization over treatment (United Nations 1988, 1971, 1961), though there were critics who argued that these Conventions did not give independent nations adequate authority over their own policies and favored more powerful over less powerful nations (Bewley-Taylor 2003; Room and Reuter 2011; Sinha 2001).

The Relationship Between Drugs and Violent Crime

Legally and otherwise, in contemporary societies many different pharmacological substances are available and used by different people in different circumstances for a wide variety of purposes. Some are considered beneficial to the health and well-being of people, and others are considered harmful. There are drugs that are available under law with more or less regulation because it is determined that they have therapeutic value, and sometimes even because they are determined to have acceptable recreational value (Chou et al. 2009; Kalso and Vainio 1990; Mather 1995; O'Malley and Valverde 2004; Reisman 2011; Weil 1972; World Health Organization 2007). Others are not available or only available outside of legal channels because they are determined to have no acceptable value to people or communities. Despite the fact that the determination of whether a drug is beneficial or harmful may be a product of ideology or culture rather than science (Bakalar and Grinspoon 1984; Brownstein 2013; Duster 1970), those that are determined to be harmful are more often obtained and consumed outside of legal authority and consequently more likely to be linked to crime and criminal violence. The notion that drug involvement is related to violent crime is based on this argument, that the users and dealers in illicit drugs considered harmful to people and communities in one way or another make the people involved commit violent crime. Before that conclusion can be reached there are a number of questions that need to be answered. What does it mean for a drug to be related to violent crime, or anything else for that matter? And if there is a relationship, how is it manifested in social experience?

What does drug-related mean?

The question of what it means to say that drugs are related to violent crime is more difficult to answer than it might seem. Because two things occur at the same time in the same place does not necessarily demonstrate that one is related to the other. As any social scientist knows, correlation is not a synonym for causation. What does it mean to say that violent crime is related to drugs?

As noted earlier, while at the level of any individual law enforcement jurisdiction there is a clear definition of what behaviors and actions constitute violent crime, in social experience it is not always so clearly defined or measured. That said, it is possible to distinguish individual and social actions and behaviors as cases of violent crime. It is also possible to identify particular chemicals as drugs given a detectable psychopharmacological effect when they are ingested by an individual or individuals. So for observers of social action and behavior it is possible to detect both incidents of violent crime and incidents of drug using or drug trade, but it is not so easy to determine when there is a connection between them (Brownstein 1993).

For purposes of analysis and debate it is possible to define the drug relatedness of a violent crime in terms of the extent to which it is arguable by various observers, including for example researchers and public health or public safety practitioners,

that drugs in one way or another contributed to a case of criminal violence in an “important and causal manner” (Goldstein et al. 1989, 662). Naturally this definition immediately raises two issues. First, the determination of importance is a subjective matter. Achieving consensus about whether or not drugs played an important role in a violent crime incident is a useful way to address this concern but is not always feasible. For example, a law enforcement officer looking at a particular incident is conducting an investigation and searching for clues that will guide his or her investigation, while a researcher looking at the same incident is asking if the evidence meets the standards of science in reaching the conclusion that drugs mattered in the outcome (see Ryan et al. 1990). The second issue, the matter of causality, is inherent in the question of scientific standards. Must drugs have caused the violent crime outcome for the two to be related, and if so, how can a social scientist demonstrate that there is a valid causal relationship? Because someone was high on drugs or involved in dealing drugs when they committed an act that came to be defined as violent crime does not necessarily mean that the use of or involvement with drugs caused the violent action or behavior. That said, is it possible or even realistic on any level to argue for a relationship between drugs and violent crime?

Goldstein’s tripartite framework

On a conceptual level, Paul Goldstein proposed a tripartite framework to provide a theoretical basis for understanding and explaining the relationship between drugs and violence (1985). According to this framework, Goldstein hypothesized that drugs could be related to violence in three different ways. There could be a psychopharmacological relationship when the violence was a direct consequence of either short- or long-term ingestion of a particular drug or drugs by either the perpetrator or the victim in a violent incident. An individual who used a drug such as cocaine or methamphetamine, for example, as a direct pharmacological response to the use of the drug might act in a violent way toward another person, or might act in an impetuous or reckless way that draws the violence of another person.

Or the relationship between drugs and violence theoretically could be what Goldstein called economic-compulsive. In that case an individual might resort to violence in order to obtain drugs or money for drugs when he or she does not have the necessary economic resources to obtain a particular drug or drugs but does have a compulsive need to use the drug. In a case such as this, the individual feeling compelled to obtain the drug for personal use might engage in an economic crime such as burglary or larceny that becomes a violent crime like robbery or assault when the target of the economic crime resists.

The third notion posited by Goldstein for how there might be a relationship between drugs and violence is what he calls systemic. When the drugs–violence relationship is conceptualized as systemic, it means that the violence is a product of the routinely aggressive and violent patterns of action and interaction found in the way or ways that drug use and drug distribution are systematically organized or

operate. That is, for particular drugs their use and trade take place in a world outside of civil society and legitimate authority and consequently expose the people who live in that world to a greater risk of violence. So, for example, in that world there might be violent outcomes that result from disputes between different people dealing drugs in the same sales territory over the right to sell in that territory, or disputes between the people buying and the people selling a particular drug about things like the quality or quantity of the drug being sold. There might be violence by drug dealers against their employees as reprimand or punishment for stealing from the boss, or violence by customers against dealers for selling bad drugs or dealers against customers for not paying their debt. There could be robberies of drug dealers or even violence from disputes over not sharing drug paraphernalia.

Research on the Drugs–Violent Crime Relationship

Goldstein and his colleagues did conduct a number of research projects to study the efficacy and relevance of the tripartite conceptualization for understanding and explaining the relationship between drugs and violence, and several of these focused particularly on violent crime (Brownstein and Goldstein 1990; Brownstein et al. 1992; Goldstein et al. 1989, 1992; Spunt et al. 1994a, 1994b). From these studies they observed and concluded that in the cases of psychopharmacological drug-related violence, alcohol is the most common drug involved and in cases involving illicit drugs such as cocaine powder or crack, the violence more often is related to drugs in a systemic way (Goldstein et al. 1989, 1992). Naturally, this is only a small part of the body of research on drugs and violent crime. But after Goldstein introduced the tripartite framework it did have an influence on much of the work going forward. It also helps to appreciate the value of distinguishing studies involving drug use and violent crime from studies of drug dealing or trafficking and violent crime.

Drug use and violent crime

Much of the research on the relationship between drugs and violent crime during the middle of the twentieth century focused on how the use of drugs might be relevant. This research naturally included the use of alcohol as a drug and given the extent to which toxicological data on homicide victims were available as a source of data on drug use of people involved in violent crime, many studies were about the drug use of homicide victims.

One particularly important study was conducted by Marvin Wolfgang and Rolf Strohm using data collected from the files of the Homicide Squad of the Philadelphia Police Department. They studied 588 homicides that were committed and known to the police in Philadelphia over five years from January, 1948 to December, 1952 (Wolfgang and Strohm 1956). According to their findings, among the victims of the 588 homicides, 64% had consumed alcohol at a time very close to the time they were murdered. Their conclusion was that alcohol has a causal or at least a contributory

relationship to homicidal violence. During the 1960s John Hepburn and Harwin Voss conducted a follow-up to the Wolfgang–Strohm study and reached a similar conclusion for homicide victims in both Philadelphia and Chicago (Hepburn and Voss 1970).

Findings and conclusions from other studies of homicide victims have supported this conclusion. In another Philadelphia study, Margaret Zahn and Marc Bencivengo studied homicide records and concluded that among people who used illicit drugs homicide was the leading cause of death (Zahn and Bencivengo 1974). Later, in a nationwide study in the United States, Riedel, Zahn, and Mock found that alcohol and narcotic drugs were the substances most commonly found in the bodies of homicide victims, though they also found that most often drugs were not identifiable in the bodies of those victims (Riedel, Zahn, and Mock 1985).

In a study in New York City of both toxicological and autopsy data for all bodies identified as having expired due to unnatural causes, Paul Haberman and Michael Baden found that among people who were known to have abused narcotics or alcohol or both, homicide was the second most common cause of death following the substance abuse itself (Haberman and Baden 1978). Similarly, using autopsy records from New York City Kenneth Tardiff and Elliott Gross studied homicide victims and concluded, “victims of drug-related homicides were more likely to have only drugs present in their blood, victims of robberies were more likely to have neither alcohol nor drugs, and victims of disputes had alcohol either with or without drugs” (1986, 26). Robert Budd conducted a study in Los Angeles that looked at cocaine use among homicide victims rather than narcotics or alcohol. He studied a sample of 114 homicide victims and found, “In 1987, more than one out of every five homicide victims in the county were found to have cocaine and/or its major metabolite benzoylecgonine present in their blood and/or body tissues, indicating use of cocaine a short time prior to death” (Budd 1989, 375). More recently, Kuhns and his associates conducted a meta-analysis of 61 studies of alcohol toxicology reports for homicide victims and found that almost half of homicide victims in their analysis tested positive for alcohol and about one-third were determined to have been intoxicated at the time of death (Kuhns et al. 2011).

While given the availability of data much attention has been paid to the study of homicide victims, there have also been some studies that focused on homicide and other criminal offenders. For example, Lawrence Gary studied homicide data from a number of cities in the United States and found a strong relationship between the use of alcohol and the commission of the violent crime of homicide, especially among black males (Gary 1986). Similarly, William Wieczorek and his associates studied 1,887 homicide offenders under custody in a correctional facility and found that more than half reported that they had been under the influence of one drug or another, most often alcohol, at the time they committed their crime (Wieczorek, Welte, and Abel 1990). In a study of rapists who were included in a prisoner inmate survey, Patricia Ladouceur and Mark Temple found that fewer than half of the respondents reported having been under the influence of a drug, including alcohol, at the time of the rape (1985). More recently, Lintonen and his colleagues in Finland reviewed a number of studies of drug use among prisoners and concluded that while

there are limitations with prisoner interview studies, their findings do suggest disproportionate use of drugs among people sentenced to incarceration for having committed a crime (Lintonen et al. 2011).

But in the end, while the use of certain drugs at certain times by certain people may have a contributing relationship to violent criminal actions or behavior, not all drug use results in violent crime and not all people who use one drug or another commit a violent criminal act. For example, one study by Paul Goldstein and his associates using the tripartite framework found that some crack cocaine users in New York City during the late 1980s did engage in acts of lethal violence, but more often than not they committed the act of violent crime in response to a market-related conflict or dispute over things like product quality or market share and rarely did they commit a violent crime as a result of having used the drug (Goldstein et al. 1989). Recognizing the limitations of the ability to conceptualize and measure the association between drug using and violent crime, after an extensive review of research on the subject Jeffrey Fagan wrote, "Although intoxication is widely found to be associated with aggressive conduct, the association is far from consistent and the reasons are diverse and poorly understood" (1990, 243).

Drug markets, drug trade, and violent crime

As noted earlier, under the tripartite framework that Paul Goldstein developed to conceptualize the relationship between drugs and violence, systemic drug-related violence referred to violence, or in this case violent crime, as the outcome of the routinely and particularly aggressive and violent patterns of action and interaction among people engaged in the organization and operation of using and distributing or manufacturing illicit drugs. Theoretically the social realization of such violence as it relates to people and their experience in a world of drug using and drug trade and trafficking could be experienced in a number of different ways. For example, thinking of it as a commercial market, the illicit drug trade would include a highly competitive and unregulated system of production and manufacture as well as similarly unrestrained systems of wholesale and retail distribution. As a social institution, such markets would involve relationships between people who are owners, workers, and consumers all engaged in personal interactions and commercial transactions taking place outside of the realm of any legitimate authority or control. So, for example, it is not surprising that in their studies of drugs and homicide in New York City during the late 1980s and early 1990s when crack cocaine was the focus of public drug policy, Goldstein and his colleagues found evidence of homicide and other violent crime associated with disputes between drug dealers over territory, robberies of vulnerable dealers or customers, assaults by dealers to collect debts from people who had not met their financial obligations, and punishment of insubordinate drug workers (Goldstein et al. 1989, 1992).

So it is not surprising that while much of the extant research on drugs and violent crime has focused on drug using, there is a history of research specifically on drug

markets, trade, and trafficking as it relates to such violence. In an important early study in the 1970s, Patrick Hughes and his colleagues conducted an innovative epidemiological study of heroin users in Chicago. At the community level they studied a population of individuals addicted to heroin and explored how violence found its way into their everyday lives through their relations with the people in their community who were selling heroin (Hughes 1977). They observed that to be a heroin dealer in the community, an individual had to be prepared to use violence at all times to avoid being victimized by the people to whom they were selling the heroin. They found that the dealers consequently would work in groups and most often would carry weapons, including guns and knives. But the violence and violent crime they observed were more widely spread throughout the community. They wrote, "dealers were not the only source of violence. Deviants of all sorts frequented the addicts' street hangouts, and in these high-crime neighborhoods there was always the risk of confrontation by a drunk, or by members of a delinquent gang who wanted to take away an addict's freshly stolen television set" (1977, 31). They considered this to be an addict subculture that included violence and violent crime as part of everyday life for its participants.

Looking more broadly at a variety of drugs, including alcohol, over a period of decades and considering national trends, in a notable study Margaret Zahn conducted a historical review of homicides statistics in the United States during the twentieth century. Her study demonstrated that there is a relationship over time between homicide rates generally and the organization and operation of markets for the production, distribution, and consumption of illegal goods and services (1980). Looking specifically at the illegal markets for alcohol in the United States she found that the rate of homicide varied so that it was higher during Prohibition when there was disagreement over control of the markets and lower after Prohibition ended. Looking at those markets and markets for illicit drugs, notably heroin and cocaine, she concluded, "It seems possible, if not likely, that establishing and maintaining a market for illegal goods (booze in the 1920's and early 1930's; heroin and cocaine in the late 1960's and early 1970's) may involve controlling and/or reducing competition, solving disputes between alternate suppliers or eliminating dissatisfied customers" (1980, 128).

The later decades of the twentieth century were years when the levels of public concern and government action were high on the international, national, and regional and local levels with regard to the trade and trafficking in illicit drugs. Consequently there were numerous studies about that trade and trafficking and in particular their relationship to problems of public health and safety, some of it about violent crime and much of it local. In a study of a single police precinct in New York City, Ronald Heffernan and his associates conducted a study of homicide data and found that over 40% were related to the drug trade in one way or another (Heffernan, Martin, and Romano 1982). In a statewide ethnographic study in California, Patricia Adler studied the business of marijuana growing and found that growers were not only likely to carry firearms regularly but on occasion to use them as well (1985). In Philadelphia, Leon Pettiway studied the travel patterns of crack users and concluded

the locations of drug transactions in a city matter in terms of the distribution of violent crime (1995). Similarly, George Rengert studied the geography of illicit drug trafficking and concluded that there is a relationship to violent crime (1996).

More recently, at the start of the twenty-first century there has been less public attention to the problems of illicit drugs but some research has continued, and the findings are not especially different. Recent studies, for example, study large national datasets not necessarily directly related to crime or justice and focus more directly on a specific crime other than homicide. For example, McMulty and Bellair studied more than 13,000 adolescents between the ages of 11 and 20, using data from the National Longitudinal Survey of Adolescent Health, and identified racial and ethnic differences among white and minority youth in terms of serious violent behaviors (2003). In a single city study of the local drug trade, Mark Berg and Andres Rengifo found that the way local drug markets were organized and operated influenced the level of robbery in the community by providing an informal social control mechanism (2009). Using national data but focusing on homicide, Graham Ousey and Matthew Lee explored the hypothesis that homicide rates had declined over time in relation to changes in illicit drug market dynamics and concluded that there was some truth to that explanation (2007). In the case of methamphetamine trade, Henry Brownstein and his colleagues found that while violence and violent crime may have been used at the level of international trade, on the local community level violence related to methamphetamine was more often family violence than criminal violence (Brownstein, Mulcahy, and Huessy 2014). Peter Reuter conducted a review of research on the relationship between illicit drug trafficking and violent crime and found that most often drug markets are peaceful but there are times when a relationship with violent crime is observable (2009).

While there has been public interest in the relationship between illicit drug trafficking and violent crime in recent years, some level of controversy remains about the nature of that relationship. Whereas the studies by Goldstein and his colleagues focused on drug market participants and the nature of their interpersonal and transactional relationships, a study by Pamela Lattimore and her colleagues focused on the nature of the organization and structure of the drug markets themselves. Lattimore directed a study of homicides in eight cities in the United States recorded during the years 1985 to 1994. She and her colleagues found that the level of homicide varied in relation to the relative stability of the markets (1997). Consequently a more complete understanding of the relationship between illicit drug markets and trafficking needs to pay attention to both the micro-level relationship between participants in the markets and trade and the macro-level dynamics of their organization and operation.

What We Know and Do Not Know

This chapter provides an overview of the extant theory and research describing and explaining the relationship between illicit drug production, distribution, and use and violent crime. Given findings of research that has been done, it would not be difficult to

argue that in one way or another there are ways in which involvement with various drugs in particular circumstances does have a relationship to involvement in violent crime in one way or another. But clearly there remain questions about different drugs involving different people in different circumstances. And questions remain about what we mean when we argue that drugs and violent crime are related. Given the existence of such a relationship, questions remain about how that is relevant to making policy or designing programs to manage the relationship or at least to minimize the level of violence that may in some way be a consequence of involvement with drugs.

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Drugs and Violence in Personal and Intimate Relationships

Deborah Baskin and Ira Sommers

In many ways, the domain of interpersonal relationships is an important lens through which to consider the potential antecedents and consequences of substance use. For instance, relationship problems are frequently markers for substance use problems. For that matter, problems in interpersonal relationships are oftentimes part of the diagnostic criteria used to assess substance use disorders. According to Sroufe, Weinfeld, and Carlson (2000), interpersonal relationships may play a role in creating pathways leading to substance use problems. Emotion dysregulation is one such pathway that has its roots in the child–caregiver relationship and one that ultimately shapes later patterns of self-regulation. This can become intergenerationally problematic as the substance-abusing parent reproduces dysregulation in offspring by failing to produce secure attachment, self-worth, and personal effectiveness. Such failure carries over into other personal relationships, ranging from peers to teachers and neighbors, among others. Thus, it is important to consider both breakdowns in, and the lack of, interpersonal relationships in order to understand social functioning problems that may be related to substance use.

Additionally, interpersonal relationships are often considered to be key contexts within which substance use problems emerge, are maintained, or are overcome. They are routinely included in research on risk and protective factors for substance use, and in some areas, such as delinquency research, they assume a dominant role. At the same time, though, while interpersonal relationships can have an etiological effect on the development of substance abuse problems, they can also play a protective role. Relationships within the immediate and extended family, as well as those with non-related supportive adults and peers, may moderate the impact or worsening of substance use.

Paradoxically, drug use is oftentimes engaged in so as to prompt or enhance interpersonal relationships (Homer, Solomon, Moeller, Mascia et al. 2008). However,

its *chronic* use is known to produce the opposite effects, such as depression, hostility, social isolation, and other problems that militate against sociability. It is known to interfere with social cognition such that the user has difficulty reading social cues and assessing interaction situations (Boles and Miotto 2003; Homer et al. 2008; Sommers and Baskin 2006).

While interpersonal relationships are often viewed as contextually important, they can also be seen as etiologically related to the development of substance use and substance use problems. For instance, there is a plethora of research that demonstrates an association between victimization and later substance use and abuse (for a review, see Logan, Walker, Cole, and Leukefeld 2002). Thus, relationships are not only environments in which problem substance use exists and which need to be considered in order to best understand it, but they may also “cause” substance use to occur in the first place.

It is important to note that when substance use and interpersonal relationship problems co-occur, it is frequently not possible to determine the direction of causality. For that matter, each of these problems is identified as a risk factor in the other’s profile and both are considered risk factors for other sets of problems that affect interpersonal relationships, such as employment instability (Arnett 2005; Connors, Bradley, Mansell, Liu, Roberts, Burgdorg, and Herrell 2003; Kandel and Yamaguchi 1987; Merline, O’Malley, Schulenberg, Bachman, and Johnston 2004), homelessness (Connors et al. 2003; Moos, Nichol, and Moos 2002; Phinney, Danziger, Pollack, and Seefeldt 2007; Tyler and Johnson 2006), poor physical (Connors et al. 2003; Newcomb and Bentler 1987) and mental health (Borges, Walters, and Kessler 2000; Connors et al. 2003; Patton, Coffey, Carlin, Degenhardt, Lynskey et al. 2002), and problems with the law (Connors et al. 2003; Goldstein 1990; Nordstrom and Dackis 2011). At the same time, though, the presence of substance use or even of substance use problems does not necessarily mean that the substances affected the interpersonal context or that the interpersonal context was responsible for the substance use problems, for different substances affect people differently and may depend on the neurobiological, psychological, cultural, and situational circumstances attached to that individual.

Suffice it to say, there is great complexity in understanding the multifaceted connections between interpersonal relationships and substance use. Nonetheless, most research points to the role of two important sets of interpersonal relationships, those among family members and those among peers. While it remains difficult to ascertain causality or correlation, unifinality or multifinality, these interpersonal relationships assume a key role in the etiology, maintenance, and desistance from problematic substance use.

Substance Use and Parent–Child Relationships

According to the National Survey on Drug Use and Health (2012), an annual average of 7.5 million children younger than the age of 18 (10.5% of all children) live with a parent who had an alcohol use disorder in the past year and 8.3 million have at least

one parent who uses drugs. Consistently, research demonstrates that parental substance use problems adversely affect the family. Specifically, and generally, drug-involved families are more likely to engage in *intimate partner violence* (Brookhoff, O'Brien, Cook, Thompson, and Williams 1997; Fals-Stewart, Golden, and Schumacher 2003; Fantazzo, Fusco, Mohr, and Perry 2007; Kelley, Klostermann, Doane, Mignone, Lam, Fals-Stewart, and Padilla 2010; O'Leary and Schumacher 2003); *child abuse and neglect* (Altshuler 2005; Amstadter et al. 2011; Arellano 1996; Bavolek and Henderson 1989; Dunn, Tarter, Mezzich, Vanyukov, Kirisci, and Kirillova 2002; Gregoire 2001; Holmes 2013; Kelleher, Chaffin, Holleberg, and Fischer 1994; Ronel and Haimoff-Ayali 2010; Semidei, Radel, and Nolan 2001); *poor parenting practices*, such as lack of supervision and monitoring, inconsistent and harsh discipline (Connors et al. 2003; Dunn et al. 2002; Mayes and Truman, 2002; Osborne and Berger, 2009); a wide variety of *illegal activities*, often involving the use of violence (Altshuler, 2005; Connors et al. 2003; Dunn et al. 2002; Mayes and Fahy 2001); an increased risk of arrest and imprisonment (Kelley et al. 2010); and they expose their children to *dangerous situations* (Amstadter et al. 2011) that often result in unaddressed and sometimes serious medical problems (Barnard and McKeganey 2004; Shulman, Shapira, and Hirschfield 2000). Children in drug-involved families also tend to grow up in social isolation, separated from prosocial influences and opportunities to build the sorts of social skills and networks that would protect them from adverse consequences (Bays 1990; Connors et al. 2003).

Children living with substance-abusing parents are at greater risk of developing psychological symptomatology associated with anxiety, depression, hyperactivity, and emotional dysregulation (Fals-Stewart, Kelley, Cooke, and Golden 2003; Weissman, McAvay, Goldstein, Nunes, Verdelli, and Wickramaratne 1999). They are also at greater risk of having their own substance abuse problems (Barnard and McKeganey 2004; Blechman 1982; Butler, Fearon, Atkinson, and Parker 2007; Catalano, Haggerty, Gainey, and Hoppe 1997; Connors et al. 2003; Dunn et al. 2002; Hogan 1998; Paolino and McGrady 1977; Johnson and Leff 1999; Kilpatrick, Acierno, Saunders, Resnick, Best, and Schnurr 2000; Merikangas, Rounsaville, and Prusoff 1992; Pears, Capaldi, and Owen 2007; cf. Harford, Haack, and Spiegler 1987; Rutter 1990).

Drug-involved families are more likely to experience heightened poverty (Bays 1990; Dunn et al. 2002) resulting in homelessness (Altshuler 2005; Connors et al. 2003). And, the drug-involved family context has been identified as one in which violence, both domestic and street, is pervasive (Ondersma, Delaney-Black, Covington, Nordstrom, and Sokol 2006). Available, albeit limited, research also indicates that the combination of growing up in drug-involved families *and* exposure to violence elevates the potential for adverse consequences well beyond that of each factor, individually (Meyerson, Long, Miranda, and Marx 2002; Ryan, Kilmer, Cauce, Watanabe, and Hoyt 2000). It appears, then, that having drug-involved parents may be a potentiating factor in the association between violence exposure and negative outcomes, one that may put children on a trajectory of life course persistent problems that affect them personally as well as those around them, that is, the community.

While children of drug-involved parents are more likely to come to the attention of child welfare than other at-risk children, they also do so at a younger age and are more likely to be placed outside of the home in alternative care arrangements that, themselves, are rife with abuse and neglect (Semidei, Nadel, and Nolan 2001). They tend to fare poorly in alternative care arrangements due to inexperience with appropriate parental supervision and monitoring (Cleaver, Unell, and Aldgate 1999; Haight, Ostler, Black, and Kinger 2007; Harbin and Murphy 2000; Kroll, 2004), attachment issues (Brooks and Rice 1997; Flores 2001; Haight et al. 2007; Klee, Wright, and Rothwell 1998; Howe, Brandon, Hinings, and Schofield 1999; Kroll 2004), and early childhood trauma (Haight et al. 2007). This then leads to residential placement instability, which is identified as a significant risk factor for crossing over into delinquency (Baskin and Sommers 2011; Ryan and Testa 2005). And, for those children who receive in-home child welfare services, living in a drug-involved family is found to result in stigmatization by community attitudes concerning the moral inferiority of these families (Haight et al. 2007; Hans 2004).

At the same time that many drug-endangered children are known to the child welfare system, there are those whose situation escapes detection even when a parent is arrested and/or jailed on drug-related charges. This is especially true when there is no obvious evidence of child maltreatment (Nolan 2003). Haight et al. (2007) indicate that drug-endangered children whose parents have been arrested view that event as “sad” and “scary” even months later (p.1). Some have significant trauma histories yet do not receive treatment specific to their experiences (Haight et al. 2007). While some of these children are placed in protective custody, others, even when present during an arrest, are forgotten by law enforcement officials (Nolan 2003). This then means that the child is left to care for him/herself and, in some cases, for other siblings.

Recent research attention focuses on the special circumstances surrounding the impact of methamphetamine use on family relationships. Studies describe these relationships as “chaotic” (Asanbe, Hall, and Bolden 2008, p. 229) and unpredictable, particularly during the “tweaking cycle” (Sommers and Baskin 2006). Additionally, research demonstrates that the relationships in methamphetamine-involved families tend to be violent, with children modeling aggressive behavior based on greater exposure within the family unit and between family members and those on the outside (Asanbe et al. 2008; Haight et al. 2007; Sommers and Baskin 2006; Oishi, West, and Stuntz 2000).

Returning to substance use in general, research indicates that adverse consequences of substance use on interpersonal relations are most evident during periods of intense or escalating drug use (Barnard and McKeganey 2004). For instance, Kandel (1990) documents a severe impact on parent-child relationships as substance use becomes more serious. She finds that as drug involvement increases, parents are less likely to provide supervision and are more likely to engage in harsh forms of discipline (see also Bauman and Dougherty 1983; Hein and Honeyman 2000).

Additionally, parents are more likely to engage in greater conflict with their partners and exert less control over the behavior of their children (Bauman and Levine 1986). The children's relationship with the drug-using parent(s) also tends to suffer, with child behavior becoming increasingly more defiant, aggressive, and antisocial (Bauman and Levine 1986), not only against the parents but also in their relationships with people outside of the home (Smith 1993; Stanger, Higgins, Bickel, Elk, Grabowski, Schnitz et al. 1999). However, it is critical to note that there is evidence that controlled parental substance use and periods of abstinence do not adversely impact family relationships (Hogan and Higgins 2001).

Even in families with chronic drug involvement, though, there are some that do not suffer negative results (Harbin and Murphy 2000; Kroll 2004; Ronel and Haimoff-Ayali 2010). There is evidence that having social support (Osborne and Berger 2009), close friends (McCloskey and Stuewig 2001), one caring and effective parent, grandparent, or extended family member (Asanbe et al. 2008; Holmes 2013; Osborne and Berger 2009; Overstreet, Dempsey, Graham, and Moely 1999; Ronel and Haimoff-Ayali 2010; Sullivan, Kung and Farrell 2004), or appropriate interventions (Altshuler 2005; Semidei et al. 2001; Worcel et al. 2008) may decrease the chances of a negative impact. This may be the result of a "buffering" role (Cohen and Willis 1985) played by these supports such that the child has the necessary resources to cope with the potentially traumatic effect that parental substance use problems may have on family relationships. Additionally, there may be cultural factors that act to protect some youth, particularly those who are Latino, from adverse consequences. Castro, Garfinkle, Naranjo, Rollins et al. (2007), for instance, found that family traditionalism, Latino orientation, and American orientation protected children of marijuana and/or methamphetamine from damage to family bonding.

While progress is being made in understanding the impact of substance use problems on family relationships, there still remain some obstacles to our understanding. By and large, available research specific to drug-involved families has not yet moved beyond the limitations of small sample sizes (Haight, Black, and Sheridan 2010; Holmes, 2013), cross-sectional approaches (Altshuler 2005), and descriptive analyses (e.g. Haight, Black, and Sheridan 2010; Asanbe et al. 2008; Ostler, Haight, Black, Choi, Ingery, and Sheridan 2007). Further, they fail to use comparison groups or some sort of matched samples. They typically rely on informants who are service providers or those not intimately involved in the daily lives of these families. And, no one study examines the full range of drug-involvement; instead, they focus on either distribution or, more commonly, abuse.

Most of the research on drug-involved families also relies on treatment, criminal justice, or national household survey samples. This strategy fails to capture the experiences of children who may flow under the radar of formal systems of control as well as overestimate the problematic and ignore the protective factors in these children's lives. Finally, no one study incorporates child welfare and law enforcement involvement so that an assessment can be made regarding the impact of risk and protective factors that may influence the experiences of drug-endangered children.

Child Maltreatment

There is a significant body of literature that connects parental substance use problems with child maltreatment, an “extreme on the continuum of caretaking casualty” (Toth, Manly, and Cicchetti 1992, p. 98). A study by Chaffin and colleagues (1996) finds that parents with substance abuse disorders are four times more likely to physically abuse their children and almost three times more likely to neglect them than their non-abusing counterparts. Similarly, research by Dubowitz et al. (2011) uncovers maternal drug use as one of several significant factors linked to abuse and neglect, with an almost twofold difference in reports to child protective services for abuse and neglect than their nondrug-disordered counterparts. Additionally, research demonstrates that parental alcohol abuse is a risk factor for their children’s sexual and physical abuse (Miller, Maguin, and Downs 1997; Vogeltanz, Wilsnack, Harris, Wilsnack et al. 1999).

Research clearly points to parental substance use problems as increasing the risk for child maltreatment, particularly neglect (Bays 1990; Dunn et al. 2002; Famularo, Fenton, and Kinscherff 1992). This is especially problematic as the relationship between neglect and adverse outcomes for children is greater than for sexual and physical abuse (Barth 1998; Trickett and McBride-Chang 1995) and puts children at higher risk for psychological (West and Prinz, 1987) and own substance use problems (Chasnoff and Lowder 1999; Hawkins, Catalano, and Miller 1992). Dunn et al. (2002) propose that the nexus between neglect and adverse outcomes is rooted in the effect that poor parenting practices has on child development, specifically, the poor quality, limited quantity, and antisocial content of parent–child interactions.

Unfortunately, the percentage of child neglect cases involving parents with substance use problems is staggering, reaching 80–90% of all cases (National Committee for Prevention of Child Abuse 1989). Chaffin and colleagues (1996) used Epidemiological Catchment Area data for six urban samples and found that parents with a diagnosis of substance abuse disorder were over three times more likely to neglect their children than controls. Similar results are found in a wide variety of studies and across a diverse set of samples (Kelleher et al. 1994; Kirisci, Dunn, Mezzich, and Tarter 2001; Tarter, Blackson, Martin, Loeber, and Moss 1993).

Interestingly, some research demonstrates that, while parents with substance abuse problems share many background factors that are consistent with parents who maltreat, in general, they are distinguished by their own upbringing with parents who also had substance use problems and by assortative mating, that is, selection of partners who also have substance use problems (Dunn et al. 2002; Kilpatrick et al. 1997; Testa, Livingston, and Leonard 2003). According to Bays (1990), more than 80% of maltreating parents with substance use problems were raised by parents who were substance abusers. Thus, it is possible that the poor quality, quantity, and content of interpersonal, family relations that characterize drug-involved families are transmitted across generations.

The quality and quantity of interpersonal relations in drug using families may also have some roots in certain characteristics of the child, such as negative affect,

difficult temperament, postnatal health problems, and learning disorders. Dunn et al. (2002) suggest that it is within the context of parental substance use problems that these child characteristics elevate the risk for neglect, particularly in light of the parent(s)' own background. Whether the roots lie in the child and/or parent, research does indicate that the quality of parenting is diminished, particularly in terms of developing attachment between parent and child. As parents with substance abuse problems tend to withdraw from interacting with their offspring, children are deprived of the necessary socio-emotional support and interaction that are required for positive development. These early experiences of neglect portend maladaptive interpersonal relations in school and peer settings, further establishing a long-term trajectory of problem behaviors.

Among those substances most studied for its effect on parent-child relations is that of alcohol. Parental problems with alcohol use affect family functioning and the quality of parenting (Eiden, Edwards, and Leonard 2004; Grekin, Brennan, and Hammen 2005), including the inability to positively interact with children (Eiden and Leonard, 1996; Whipple, Fitzgerald, and Zucker 1995) or establish routines (Jester, Jacobson, Sokol, Tuttle, and Jacobson 2000; Johnson 2001; Richter and Richter 2001). Alcoholic parents tend not to express warmth and caring (Eiden, Edwards, and Leonard 2004) and also tend to experience more intra-partner conflict (El-Sheikh and Flanagan 2001; Keller, Cummings, and Davies 2005); the combination of both alcohol misuse and domestic conflict is associated with greater parenting problems (Keller et al. 2005; Mayes and Truman 2002; Velleman and Orford 1999).

Children of alcoholics tend to experience social isolation, feelings of low self-worth, and often carry the burden of caring for the parent(s), regardless of whether the affected parent is the mother or father (Burke et al. 2006; National Survey on Drug Use and Health 2012). These effects are most pronounced among children who are exposed to parental alcohol misuse for greater lengths of time (Burke, Schmied, and Montrose 2006) and in family settings in which a greater number of adults have alcohol use problems (Barnow, Schuckit, Smith, Preuss, and Danko 2002; Corral, Rodriguez, and Cadaveira 1996; Hill and Muka 1996; Hussong, Zucker, Wong, Fitzgerald, and Puttler 2005).

Intimate partner violence (IPV)

Typically, research demonstrates a strong relationship between perpetrator substance use and IPV (Byles 1978; Fagan and Wexler 1987; Friend, Langhinrichsen-Rohling, and Eichold 2011). Co-occurrence rates are said to range from 25% to 80%, depending on the study (Friend et al. 2011). In one report on men and women arrested for domestic violence, the men were found to have consumed alcohol in 50% of their violent acts while, for women, it was 80% (Hamberger and Guse 2002). And, Busch and Rosenberg (2004) in a study of same-day occurrence of substance use and IPV, find that 78% of the men and 67% of the women were using drugs or alcohol, as related by family members and friends.

More recently, studies also show a similar relationship for victims of IPV, that is, victim's own substance use is associated with IPV (Brewer, Fleming, Haggerty et al. 1998; Cottler, Compton, Mager et al. 1992; El Bassel, Gilbert, and Rajah 2001; Kantor and Jasinski 1995; Kantor and Straus 1989; Testa, Livingston, and Leonard 2003; White and Chen 2002), with a stronger association found for women than for men (Anderson 2002 in Testa; cf. Quigley and Leonard 2000).

Reasons cited for the associations between substance use and IPV are many. First, there is research that suggests that the relationship is psychopharmacological. For instance, some argue that drugs and their attendant perceptual distortions lead to arousal and then to aggression (Brown, Werk, and Caplan 1999; Goldstein 1990; Pihl and Hoaken 1997; Virkkunen and Linnoila 1993; White 1997). Others focus on the interaction of drugs with such neurotransmitters as dopamine and serotonin, which increase the risk for violence (Moore, Scarpa, and Raine 2002).

Second, there are those studies that suggest an economic component to the relationship in cases where one partner places another in financial difficulty in order to support a habit that then increases the risk for violence between them (Moore, Stuart, Meehan, Rhatigan, Hellmuth, and Keen 2008). Third, a number of studies root the relationship in the interactions among biological and psychosocial factors, such as history of own victimization and violence perpetration as a child, mental illness, and certain personality traits, such as impulsivity and emotional reactivity, among others.

And, fourth, some research suggests that the relationship is spurious and that IPV is just symptomatic of a more generalized orientation toward the use of violence. Kantor and Asdigian (1997), for instance, argue that the association between substance use and IPV is likely due to the effect of an outside factor, such as violence in the family of origin. Yet, there are other studies, particularly those emerging from a gender studies perspective, that view the relationship as resulting from unequal power relations between partners (Amaro and Hardy-Fanta 1995; Booth, Koester, and Pinto 1995; Miller 1995; Rosenbaum and O'Leary 1981) or as a demonstration of masculinity (Moore et al. 2008). For example, substance use problems in women lead to their partners' perceptions that they deserve to be abused as their behavior conflicts with traditional gender norms (El-Bassel, Gilbert, and Rajah 2001; Rosenbaum and O'Leary 1981; cf. Kantor and Asdigian 1997).

Nonetheless, research is equivocal when it attempts to differentiate the effects of specific drugs on IPV. For instance, El-Bassel, Gilbert, Wu, Go, and Hill (2005) find that substance use problems and IPV are related for crack and marijuana but not for heroin or binge drinking. They hypothesize that this relationship exists for crack due to an impaired ability to read social cues, reduced status in the eyes of the partner, or a more generalized endorsement of violence characteristic of poor neighborhoods. However, they caution that the association for marijuana may be spurious and instead reflect the effects of marijuana that is laced with other drugs, such as PCP. Testa and colleagues (2003) find an association with hard drugs but not for marijuana, hypothesizing that marijuana use may actually curb violence between partners. Similarly, Fals-Stewart, Golden, and Schumacher (2003) find no significant

association between marijuana and IPV but do find one for cocaine and alcohol. However, Moore et al. (2008) argue that *withdrawal* from marijuana may be an important factor leading to IPV. Extrapolating from surveys of marijuana users and laboratory studies, they suggest that the greater irritability reported by recent desisters from marijuana use may increase the risk for aggression against partners. But, as of yet, there have been no temporal studies that demonstrate such a relationship.

While research on most substances and IPV appear equivocal, studies do consistently identify alcohol use problems as an independent risk factor for IPV, controlling for sociodemographic and other substance use (Caetano, Schafer, and Cunradi 2001; Cunradi et al. 2002; Fals-Stewart, Golden, and Schumacher 2003; Hoaken and Stewart 2003; Lipsky, Caetano, Field, and Larkin 2005; Tjaden and Thoennes 2000). Murphy and O'Farrell (1994) find that male-perpetrated IPV is four to six times higher among men seeking alcoholism treatment than for their non-substance-abusing counterparts, while Fals-Stewart et al. (2003) find that the odds are more than 8 to 11 times greater, a similar ratio for abuse of other drugs (Fals-Stewart, Kashdan, O'Farrell, and Birchler 2002).

In a study by Lipsky and colleagues (2005) that uses an emergency room sample of underserved, poor urban women, the prevalence of heavy drinking among male partners is five times higher than in the general population. The women's own alcohol consumption is twice that of the general population while their drug use is seven times greater than for women in the general population. These findings contribute to a better understanding of which subgroups suffer most from the substance use-IPV connection.

It is important to note, however, that research on the relationship between alcohol use and IPV is comprised of two very different measures of alcohol use. On the one hand, some studies focus on a *history* of alcohol consumption as indicating problematic use (Greenfield, Rand, Craven, Klaus, Perkins, Ringel et al. 1998; Slade, Daniel, and Heisler 1991; Leonard and Quigley 1999). On the other hand, there are those studies that focus on the co-occurrence of these two behaviors, suggesting that intoxication fuels the violent interactions (Foran and O'Leary 2008; Thompson and Kingree 2006). The implications of alcohol-fueled IPV are grave. Research indicates a greater risk of injury to women whose male partners are intoxicated during the event than for males with non-drinking female partners (Thompson and Kingree 2006).

Nonetheless, the association between alcohol and IPV may be (1) spurious, (2) indirectly correlated, (3) proximally related, or (4) potentiated by other factors. With regard to spuriousness, it may be that alcohol and aggression both share some underlying common etiological factors. However, a considerable amount of research controls for many of these factors, such as sociodemographics, polysubstance use, and certain personality traits, and the association remains (Klostermann and Fals-Stewart 2006). Alcohol may be indirectly related in that its misuse may have a destructive impact on the intimate relationship, resulting in conflict and violence. Nevertheless, a number of studies include measures of relationship quality and the association remains (Fals-Stewart, Leonard, and Birchler 2005; McHenry,

Julian, and Gavazzi 1995). In terms of the final explanation, the direct effect, recent longitudinal research does demonstrate that alcohol use is temporally related to violence (Fals-Stewart et al. 2005; Fals-Stewart et al. 2003). Finally, research suggests that alcohol in combination with other factors, such as hostile or antisocial personality traits (Klostermann and Fals-Stewart 2006; Leonard and Blane 1992), troubled marriages (Leonard and Blane, 1992; Leonard and Senchak 1996; Margolin, John, and Foo 1998; Steele and Josephs 1990; Taylor and Leonard 1983) among other factors actually explain the deleterious impact of alcohol on intimate relations.

While the relationship between alcohol and IPV is reported widely in the literature, it is important to note that the research is correlational and many studies suggest that the evidence is equivocal. For instance, many of the studies that are cited as providing evidence of a linear alcohol-IPV relationship demonstrate only a weak association (Cunradi, Schafer, Clark, and Schafer 1999; Kantor and Straus 1987; Leonard, Bromet, Parkinson, Day, and Ryan 1985; Leonard and Senchak 1996), although some studies posit that heavier drinking is more strongly associated with IPV (Cunradi et al. 1999; Kessler, Molnar, Feuer, and Applebaum 2001; Leonard et al. 1985; Murphy, Winters, O'Farrell, Fals-Stewart, and Murphy 2005; Sugarman, Aldarondo, and Boney-McCoy 1995). This may be due to a "threshold effect" (O'Leary and Schumacher 2003), whereby the association is appreciable only for high or binge drinking but not for moderate consumption.

The link between *higher* alcohol consumption and IPV appears to be robust across studies. For male alcoholics, for instance, prevalence studies indicate rates of IPV of between three and eight times higher than for their non-alcoholic counterparts (Murphy et al., 2005; see also Anthony, Warner, and Kessler, 1994; O'Farrell et al. 2003; O'Farrell and Murphy 1995; Kyriacou, Anglin, Taliaferro, Stone, Tubb et al. 1999; Robins and Reiger 1991). The common explanation for the link points to the psychopharmacological effects of alcohol combined with antisocial personality traits such that impulsivity and disinhibition are increased and violence is used to respond to conflict. Interestingly, in one study, male partner alcohol use, itself, was part of the conversation leading to IPV in the majority of events (Murphy et al. 2005).

Nonetheless, the weight of the evidence strongly suggests that alcohol abuse affects the prevalence, frequency, and severity of IPV (Stuart, Moore, Kahler, and Ramsey 2003). However, research indicates that cocaine, either alone or in combination with alcohol, is also strongly associated with IPV. In a recent meta-analysis, Moore et al. (2008) find that cocaine, more than any other substance, is strongly linked to IPV. Research also shows that the concomitant use of cocaine and alcohol increases the risk for IPV (Bennett, Tolman, Rogalski, and Srinivasaraghavan 1994; Murphy, O'Farrell, Fals-Stewart, and Feehan 2001). And, there is evidence that cocaine use is also related to the psychological abuse of intimate partners, perhaps as a result of the greater impulsivity found among cocaine users as compared to alcoholics and users of other substances (Bennett et al. 1994), or perhaps owing to the minimal stigma attached to this form of aggression as compared to physical violence.

Some research suggests that the relationship between substance abuse and IPV is aggravated by co-occurring psychiatric disorders. For instance, PTSD is shown to

potentiate IPV among substance abusers, particularly those with cocaine dependence (Parrott, Drobos, Saladin, Coffey, and Dansky 2003). This finding, though, is not replicated among serious alcoholics whose routine intoxication seems to have a mitigating effect on IPV (Parrott et al. 2003).

If we flip the relationship between substance use and IPV around, the literature is even more equivocal and limited. Relying on community surveys (Caetano, Cunradi, Schafter, and Clark 2000; Temple, Weston, Stuart, and Marshall 2008) as well as treatment samples (Chase, O'Farrell, Murphy, Fals-Stewart, and Murphy 2003), women who abuse alcohol are significantly more likely to be victims of IPV than women who do not have alcohol use problems.

A number of studies suggest that substance use follows IPV as a way for victims to self-medicate. Research by Testa and Leonard (2001), for instance, indicates that women's victimization during the first year of marriage is positively correlated with greater stress, lower relationship satisfaction, and more binge drinking. Salomon, Bassuk, and Huntington (2002), on the other hand, find that victimized women are more likely use drugs but not alcohol to self-medicate in response to IPV. And, Anderson (2002) finds that alcohol use as a reaction to victimization but not perpetration holds for both men and women, although the relationship is stronger for women.

Some research links cocaine use with IPV victimization, but only for women (Brokaw, Fullerton-Gleason, Olson, Crandall et al. 2002). Grisso et al. (1999), for instance, report that women are two to four times more likely to be victimized by partners who use alcohol or cocaine, respectively, independent of their own substance use (see also Kyriacou et al. 1999). Other studies demonstrate this relationship for men (Logan, Walker, Staton, and Leukefeld 2001). Regardless of the direction of the association, though, it is commonly thought that the use of more than one substance may be related to more significant IPV (Moore et al. 2008; Moore and Stuart 2004; Murphy, O'Farrell, Fals-Stewart, and Feehan 2001).

Research on sex differences suggests that male and female drug users are equally likely to be both victims and perpetrators (Moore et al. 2008), although a meta-analysis by Archer (2000) demonstrates that females are slightly more likely to use physical aggression but suffer greater harm when they are victims of their male partners. Of additional importance is the suggestion that female drug use, particularly that of cocaine, may play a role in increasing the risk of both female victimization and both-partner aggression (Moore et al. 2008). In terms of other sociodemographic characteristics related to drug use and IPV, the link is greater for black couples than for other racial/ethnic groups (Caetano et al. 2001; Cazenave and Straus 1990) and for younger adults (Moore et al. 2008).

Substance Use Problems and Peer Relationships

Research indicates that both substance use and substance abuse are highest among youth, ages 18–20 (Arnett 2005; Bachman, O'Malley, Schulenberg, Johnson, Bryant, and Merline 2002; Kypri, McCarthy, Coe, and Brown 2004). It is during this time

period that experimenting with a variety of substances, including alcohol, is accepted among peers as they negotiate new self-identities, experience role instabilities, engage in greater self-focus, make sense of their in-between status, and pursue risky behaviors without fear of consequences (Arnett 2005). While substance use and abuse may be heightened during “emerging adulthood,” most of these young adults do not suffer long-term consequences as they age out of problem substance use (Arnett 2005).

However, when drug use is initiated in middle adolescence, the prognosis appears direr than later initiation (de la Haye, Green, Kennedy, Pollard, and Tucker 2013; Dishion and Owen 2002; Robins and Przybeck, 1985; Windle 2000). Research points to the etiological role of substance-using peer groups among those youth who begin during this time period (Bailey and Hubbard 1991; Chassin, Presson, Sherman, Montello, and McCrew 1986; Dishion, Capaldi, Spracklen, and Li, 1995; Duncan, Duncan, and Hops 1994; Elliott, Huizinga, and Ageton 1985; Hawkins, Catalano, and Miller 1992; Marshal and Chassin 2000; Nation and Heflinger 2006; Oetting and Beauvais 1990; O’Malley, Bachman, and Johnston 1988; Wills, Sandy, Yeager, Cleary, and Shinar 2001) and with the role of these peers in influencing attitudes toward drug use (Kandel 1986; Musher-Eizenmann, Holub, and Arnett 2003; Sale, Sambrano, Springer, and Turner 2003). While peer influence can promote initiation into substance use and abuse, substance use can also affect the selection of friends (de la Haye et al., 2013; Dishion and DeMedici Skaggs 2000; Elliott et al. 1985; Jessor and Jessor 1977; Kandel 1986; Poulin, Kiesner, Pedersen, and Dishion 2011). And, there appears to be a relationship between amount of drug use and contact with drug-using peers (Dishion and DeMedici Skaggs 2000). For that matter, the actual use of drugs occurs within highly social contexts and that these social activities may actually be engaged in precisely due to the expectation that drugs will be used (Osgood, Wilson, Bachman, O’Malley, and Johnston 1996). These social contexts can take the form of “peer clusters” (Oetting and Beauvais 1987) in which attitudes and beliefs about drug use as well as choice as to which drugs are to be used are developed by cluster members. This form of “deviancy training” (Dishion and Medici Skaggs 2000) can escalate to the point where social interactions become increasingly focused on substance use, to the exclusion of other activities and topics.

The idea of “peer clusters” stands in contrast to theories of peer influence or peer pressure in that the latter suggest that the youth is passively drawn into drug-using peer relationships. Instead, cluster theory argues that human agency is involved in the decision to participate in a drug-using peer cluster and that such clusters are dynamic in that they are continually being shaped by their members. Oetting and Beauvais (1987) believe that peer clusters determine where, when, and how substances are used and that these clusters specifically help shape attitudes and beliefs about drugs. Adolescents’ substance use is often a reflection of the peer cluster, and those who have substance-using friends are likely to also be involved in substance use because within the same peer cluster they tend to share common attitudes and behaviors toward substance use.

Other psychosocial characteristics also play important roles in influencing adolescent substance use. However, a key principle of peer cluster theory is that contexts and characteristics other than peer clusters, for example family relationships, school experiences, and personal beliefs toward substance use, only influence adolescent substance use indirectly through their effects on peer clusters (Oetting and Beauvais 1987). These psychosocial characteristics are considered to be important because they influence adolescents' susceptibility to associate with peer clusters that involve drugs.

Some research suggests that youth drug use may facilitate peer interaction (Dishion and Medici Skaggs 2000; Dishion and Owen 2002) and be a way to gain acceptance by members of a peer group (Huba and Bentler 1980; Pruitt, Kingery, Mirzaee, Heuberger, and Hurley 1991).

It is important to note that a large body of research suggests that there are individual differences among youth that presage their attraction to or influence by drug-using peers. For instance, some studies suggest that youth who exhibit poor behavioral control are more likely to join with substance-using peers due to rejection by prosocial peers (Patterson et al. 1989). Or, substance-using peers may potentiate the relationship between individual factors, such as poor behavioral control, and drug use (Dishion and Patterson 1997) by strengthening antisocial traits (Chassin, Pitts, and Prost 2002; Windle 2000). Thus, access to substance-using peers is an important factor in realizing vulnerability to substance use (Fallu, Janosz, Briere, Desceneaux, Vitaro, and Tremblay 2010).

Nonetheless, access to drug-using peers may vary across time and, as a result, youth drug use may ebb and flow consistent with the nature of their peer relationships. Dishion and Medici Skaggs (2000), for instance, argue that youth substance use varies across weeks and months, depending on contact with substance-using peers.

Although there is widely replicated support for the relation between adolescent substance use and peer substance use, less is known about their potential cascading effects into other domains of functioning. As progressions in substance use and peer substance use occur during adolescence, their effects may not only amplify each other over time, but may also cascade or snowball into other domains (Sameroff 2000). Although the long-term effects of low-level adolescent alcohol or drug experimentation may be relatively small for most adolescents, a cascading chain of problems in other domains of functioning may occur for others. Haller, Handley, Chassin, and Bountress's (2010) findings indicate that adolescent risk factors influence adult substance use disorders both by causing stable within-domain impairment over time, and also by spilling over into other domains and thus creating broader impairment over time. These effects are found while accounting for the effects of several potentially confounding variables, including parental alcoholism, parental college completion, gender, and age.

Affiliations with peers who use substances, provide opportunities for substance use, and also encourage attitudes that are positive toward substance use influence both adolescent and adult substance use outcomes. Affiliating with substance-use-promoting peers can maintain and/or increase adolescent substance use over time.

This can increase the likelihood that some adolescents will experience significant long-term negative consequences of their substance use, rather than simply experiencing an adolescent-limited period of substance use experimentation.

Importantly, this line of research documents the role of parental management and supervision practices in creating environments that are either conducive to or unfavorable to associations with substance-using peers, through such mechanisms as monitoring (Barnes, Hoffman, Welte, Farrell, and Dintcheff 2006; Dishion, Patterson, Stoolmiller, and Skinner 1991; Kiesner, Poulin, and Dishion 2010; Nash et al. 2005), especially in early adolescence (Kiesner et al. 2010). Related to research on parental monitoring and peers is the suggestion that peer activity context plays a significant role in substance use behaviors. Kiesner et al. (2010) indicate that lack of parental monitoring increases the amount of time youth spend unsupervised and in venues where substance use is common.

While much research demonstrates a nexus between peer relationships and substance use/abuse, other research suggests that it is precisely the opposite, the lack of interpersonal relationships, that is, loneliness or social isolation, that facilitates substance use and abuse (Ennett, Bauman, Hussong, Faris, Foshee, and Cai 2006; Paglilaro and Pagliaro 1996). Thus, substance use may be a way that such youth cope with the lack of social interaction (Cooper, Frone, Russell, and Mudar 1995; Windle and Windle 1996). For that matter, substance use as a coping mechanism has also been examined as a response to stressful life events (Cooper, Frone, Russell, and Mudar 1995; Greeley and Oei 1999; Sadava 1985).

Overall, research on peer relationships and youth substance use show that the relationship between peers and substance use is more robust and direct than other risk factors, such as family relationships, school, community, and economic factors, and that, in combination with certain psychosocial factors, such as extroversion and conduct disorder, it heightens the risk for substance use problems. Thus, the influence of peers with whom youth choose to associate remains the most important factor in explaining substance use and related attitudes. The context of these peer relationships provides a venue for such use, a supply of substances, and oftentimes defines the social life characteristic of this group.

Conclusion

The research explored in this chapter suggests a link between substance use problems and problems in interpersonal relationships. However, the link is not deterministic. Instead, problems in either of these areas open up trajectories that are influenced by dynamic risk and protective factors. Interpersonal relationships within families and among peers assume a major role in risk and in resilience. Prosocial family and/or prosocial peer relationships mitigate substance use problems (Hawkins, Farrington, and Catalano 1998) and many substance abuse prevention programs aim to strengthen these prosocial bonds. But developmental research strongly asserts that these bonds vary in impact depending on stage in the life course.

Therefore, interventions to subvert substance use problems need to consider the developmentally relevant influences. Ergo, what might affect someone in middle adolescence might differ from what influences use problems during emerging adulthood and then when an adult.

While recognizing that multiple risk and protective factors interact differently across the lifecycle in terms of the impact of substance use and misuse on interpersonal relations, family and peers are still potent and fundamental influences. Family relationships create the context for the psychological, social, economic, and spiritual well-being of its members and of those within their broader social networks. Thus, substance use problems within this context reverberate both temporally as well as spatially.

In the preceding discussion, relationship experiences have been viewed as contributors to substance abuse because of their role as risk factors, protective factors, mediators, or moderators. However, more than simply being risk factors, relationship disturbances may be the precursors of individual psychopathology, through their role in establishing fundamental patterns of emotional regulation. They may represent the initiation of developmental pathways probabilistically leading to disorder (Sroufe 1997).

Although there are several mechanisms that may underlie the association between emotion regulation (e.g., negative affect) and substance use, there is emerging recognition in the literature that more integrative models are needed to understand the association between negative affect and substance use associations within a larger developmental context. For example, Hussong, Jones, Stein, Baucom, and Boeding (2011) define the potentially unique risk processes underlying the internalizing pathway as emphasizing problems with emotion regulation across the life span. This pathway recognizes negative reinforcement as a central process translating deficits in emotion regulation into alcohol-related behaviors and risk for addiction, particularly pertinent for predicting a negative affect form of substance use disorder as a salient outcome.

Drawing from the developmental literature, this pathway posits that risk for later substance use disorder may first emerge as inhibited temperament and emotion dysregulation in early childhood. For example, studies suggest that indices of internalizing behavior between ages 3 and 10 are predictive of more alcohol-related problems and disorder in mid-adolescence to early adulthood (Caspi, Moffitt, Newman, and Silva 1996; Zucker 2006). For those following this pathway, accumulated risks associated with continued emotion dysregulation over development further increase risk for later alcohol use problems, particularly for youths in at-risk homes marked by parental alcoholism and comorbid affective disorders with well-documented associations with poor child outcomes (Hussong, Flora, Curran, Chassin, and Zucker 2008).

Individual differences in early relational attachments are not viewed in themselves as direct causes or as the only risk factors deriving from parenting history. At the same time, they are unique among risk factors in important ways. They embody core features of interpersonal connectedness and affective regulation that are central

in psychopathology, and they entail patterns of motivational, behavioral, and emotional organization that often are prototypes for individual personality. In contrast to broad-based risk factors, such as poverty, relational attachment patterns may serve as templates for particular forms of disturbance when the confluence of risks outweighs the supports for the developing child (Sroufe, Duggal, Weinfield, and Carlson 2000).

Future research can provide greater specificity in terms of the facets of behavioral undercontrol and negative affect that predict substance use outcomes. Future studies should identify potential contextual influences (such as parenting and family influences) that affect the development of behavioral undercontrol and affect regulation. Identifying these potentially modifiable contextual factors is particularly important because they are potential targets for preventive and treatment interventions. In this regard, it will be important to study substance use problems in terms of their boundaries with other forms of internalizing and externalizing psychopathology.

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Markets and Distribution Systems

The Birth, Growth, and Transformation of UK Drug Markets

Tiggey May and Bina Bhardwa

Introduction

Over the past 30 years UK drug markets have changed significantly. There has been a marked decline in the centrality of drugs derived from naturally cultivated plants. The European heroin market is weaker now than it has been for many years and the UK cannabis market has evolved from a resin-based market, sourced from cultivating countries, to a higher-strength domestically grown cannabis market. The cocaine market, however, appears to be stable, although it is likely that a small, but significant, proportion of its customer base has altered their buying habits and are now buying from the rapidly expanding synthetic stimulant market. These changes are likely to be due to natural evolutionary changes in youth and consumer culture alongside one of many responses to the intermittent effectiveness of enforcement activity. Regardless of any change that has taken place to the transporting, buying, consuming, and policing of illicit drug markets, they endure and remain firmly embedded in our society and continue to be one of the “wicked problems” with which policy makers have to grapple.

This chapter aims to offer a classification of the main retail drug markets currently operating in England and Wales, distinguishing between open and closed, crack/dealing-house markets, and Internet surface web/darknet markets. In providing these descriptions we will describe how each market operates and document the market transformations that have taken place. We will then discuss the relationship between enforcement, price, and purity. In the first instance, however, we provide a short description of the five methodological approaches to drug market research, drawing substantially on the work of Alison Ritter (2006).

Studying Drug Markets

Illicit drug markets can be studied from a variety of perspectives employing a diverse range of methodologies. Ritter (2006) identified and examined five different disciplinary contributions to studying illicit drug markets: the ethnographic qualitative approach; the economic approach; the behavioral and psychological approach; the population-based and survey research approach; and the criminological approach. An ethnographic qualitative approach examines drug markets from the perspective of market participants – the buyers and sellers; in addition, some studies also gather views from other well-informed individuals, local residents, enforcement personnel, and treatment professionals. This approach provides a richness of data about market operations, the availability and price of illicit substances, price variations, perceived purity levels, levels of violence, new market participants (both users and sellers), and the impact of enforcement activity on market stability. In essence, it provides an invaluable snapshot of a drug market at a particular time in a particular location. The ethnographic approach has been and is still favored by a number of researchers and academics from a variety of disciplines. For example: Patricia Adler (1985) employed the approach to examine hidden populations and subcultures, including upper-level drug dealers; Philippe Bourgois, an anthropologist, studied street-level drug dealers in East Harlem (1996), and followed this up with a longitudinal study of homelessness and drug dependence among heroin injectors and crack smokers in San Francisco, publishing in 2009; Johnson et al. (2000) used the approach to examine crack distribution and use in New York City; and Inciardi et al. (1993) studied the relationship between women and crack cocaine employing the ethnographic approach.¹

Economists approach the analysis of illicit markets in much the same way as the analysis of legal markets. As Ritter notes, “studying markets is ‘core business’ for economists... and at its most simple, economics concentrates on supply and demand curves, which intersect at a market equilibrium” (2006: 455). Economists examine the relationship between supply and demand using a traditional framework; however, in doing so markets tend to be examined from either a demand-side perspective or a supply-side approach. Ritter found that one of the obstacles faced by economists when attempting to understand illicit markets is the problem of defining a market boundary – where do the operations of one market finish and another start? She notes that other branches of economic study, most notably legal economics, might prove useful to the overall understanding of illicit market dynamics. Researchers highlighted by Ritter as examining markets from such a perspective include Beckert and Wehinger (2013), Caulkins and Reuter (2006), Caulkins and MacCoun (2005), Eck (1995), Moore et al. (2005), and Wagstaff (1989).

The behavioral and psychological approach as outlined by Ritter focuses on the insight the perspective can shed on our understanding of the relationship between choice and price. In essence, understanding the purchasing practices of drug users will give researchers an understanding of how and in what situations drug users are able to exercise choice about whom they purchase from and at what price, which in

turn will provide researchers with a more nuanced understanding regarding the elasticity and inelasticity of demand. In addition, psychological research has also examined the positions market participants engage in and the networks associated with these functions. Researchers who have examined drug markets from this perspective include Johnson et al. (1985) and Sherman and Latkin (2002).

Although there are a number of limitations to population-based and survey research data when describing illicit drug markets, the approach can provide valuable data on the behavior of and price paid by drug users, in part due to the “freely available data, the large number of data points and the capacity to do time trend analysis” (Ritter 2006: 458). However, the key shortcoming of this approach is that drug users are extremely under-represented in household and survey research. Ritter does, however, suggest that large-scale surveys that target drug-using populations (e.g., the American Arrestee Drug Abuse Monitoring data, the Australia Drug Use Monitoring data, and the United Kingdom’s National Drug Treatment Monitoring System) have the ability to provide useful data on significant populations of drug users on price, purity, and treatment episodes. Researchers using such data to examine drug market activity include Taylor and Brownstein (2003), Brownstein and Taylor (2007), Golub and Johnson (2004), Milner et al. (2003), and McSweeney and Skrine (2013).

Finally, the criminological approach examines illicit markets using routine activity theory, social control, and social normative theories, adopted by US researchers such as Eck (1995), who examined the geography of illicit markets,² and Gruenewald and colleagues (2003, cited in Ritter 2006), who explored geospatial models to predict violence based on people and place characteristics. Another criminological approach is that of cluster analytic techniques, which are used to identify types of drug-dealing places; this approach was been employed by Mazerolle et al. (2004). Most of the contributions in this field rely on enforcement data or other criminal justice data to inform their understanding of illicit markets and will therefore predominantly reflect enforcement rather than market activity.

While all the approaches outlined by Ritter (2006) add to our understanding of illicit drug markets, the following section describes the dynamics of open, closed and dealing-house markets very much from the perspective of the ethnographic qualitative approach. In contrast, our description of the new psychoactive substances (NPS) market draws from a range of perspectives and methodologies, including: the survey data/specific population approach, the traditional ethnographic perspective, and new methodological approaches such as virtual web-crawling.

Varieties of Markets³

Illicit drugs are traded within a market through which buyer and seller have to locate one another to be able to conduct a transaction. Common-sense discussions of drug markets tend to oversimplify their nature and exaggerate the differences and social

distance between buyers and sellers of drugs, often misunderstanding the relationship and the fluidity of movement that exists between the two. Drug sellers tend to be cast as outsiders who prey on local communities, drug users as the victims of “evil pushers” (May et al. 2005, 2008). Markets are portrayed as supply driven, with “pushers” creating and then exploiting their markets. In reality, sellers often come from the communities in which they sell drugs; often, too, they are dependent users selling drugs to fund their own use (Hough et al. 2000; May et al. 2001b). In addition, this type of drug selling is recognized and, to some degree, tolerated within some parts of some communities; in particular, communities that are economically disadvantaged and socially deprived (Hales and Hobbs 2010; May et al. 2005).

Open markets

Borrowing from economic theory, open markets can be defined as ones that are open to any buyer, with no requirement for prior introduction to the seller and few barriers to access. Illicit markets display many of the characteristics of licit markets: buyers know where to go to find the goods they want, they can trade quality against price, and sellers are able to maximize their customer base due to their openness and visibility. The difference between the licit and the illicit, however, is that the illicit market has the added complication that both buyers and sellers need to take precautions to avoid enforcement action being taken against them. In other words, buyers need to balance the advantages of ease of access against the need for security. The main advantage of an illicit open street-based market – ease of locating buyers and sellers – is also its major drawback for participants, as it renders them particularly vulnerable to policing (Brownstein and Taylor 2007; Eck 1995; Edmunds et al. 1996; May et al. 2001b; May and Hough 2004; Wood et al. 2004).

The precise location of an open drug market is likely to be a product of the geographic spread of demand, the risk of enforcement, and the physical amenity which particular places can offer to those buying and selling drugs. Open markets enjoy a degree of protection against the threat of enforcement if the host area has sufficient street activity to mask the activities of market participants. While this type of market is very much in decline, in most urban cities there will be at least one open market, in part to facilitate access to the multitude of closed markets that will inevitably be operating across each city. Open markets tend to have reputations beyond their immediate vicinity and are generally viewed by local residents as areas to avoid due to the fear of violence and robbery. Many open drug markets are also co-located with other criminal markets, such as a market for stolen goods and, more notably, sex markets. Often residents fear the possibility of being propositioned either by sex workers or by their potential clients. Below is an example of a typical street-based open market – as described by the sellers who staffed the market and sellers who worked from the nearby closed market.

Coya: An open street-based local drug market

Coya is located in a busy urban area close to the city center. The area is vibrant, ethnically diverse, and extremely busy, with commuters passing through on their way to and from work and visitors coming to the area to shop and visit the many clubs, bars, and restaurants. The housing tenure is a mixture of large Victorian houses and flats, modern blocks, and local authority estates – some of which are described as “no go” areas. Several bus routes pass through the area and the area hosts a train station. As a result the transient population is high.

Coya has an open street-based market, selling heroin, cocaine, crack cocaine, cannabis, and to a lesser extent illicit pharmaceutical drugs. Coya is never in short supply of buyers and has an ample supply of sellers. Sellers who are arrested, retired, or who move on to sell in another market are replaced very quickly. Sellers described the market as being run by Jamaican nationals or British-born individuals with strong connections to the West Indies, often referred to as “yardies.” The market operates from fixed locations, mainly along a main arterial route into the area but also along some of the smaller, less busy roads. Over half the sellers interviewed stated that the market is a “free for all,” meaning that anyone can buy in the market. Interviewees reported that street dealers tend to know one another and that a new dealer would have to be introduced by one of the established sellers before being “allowed” to sell. Interviewees commented that the market has a high turnover of sellers and that when one is imprisoned or deported, their place is quickly taken by someone else. Sellers reported earning an average of £400 per week selling drugs. This ranged from £35 to £20,000. A number of sellers reported that they carried a weapon (firearms and/or knives); many more, however, had access to one. The following quotes illustrate views of the sellers in the open street market:

[Coya] is yardies’ territory. Strangers cannot start selling on the street without knowing them first. They [the dealers] all know each other. (User-dealer – 38 years old)

If you have back-ups you can start dealing down the street. Other dealers must know you got someone behind you. If no back-ups you get first of all robbed. (Dealer – 18 years old)

The runners employed in this market tended to be older drug users, known and trusted by sellers, not young “wannabe” sellers looking to break into the market. As illustrated below:

Runners aren’t organized, they are [drug] users who are trusted by yardies. In the estates there are runners that are mainly kids. (User-dealer – 38 years old)

[There are] no kids in Coya’s market. The kids sell weed on their own for themselves. Some kids act as runners on the estates. (Dealer – 19 years old)

Sellers generally thought that with any increase in police activity the number of street-based sellers decreased, often pushing them to sell in the closed market – if they were allowed. Sellers from the nearby closed market believed the yardies working from the open market had a reckless attitude to selling drugs, which had resulted in the market appearing to be more “open” than it actually was. This often resulted in an increase in police activity, as illustrated below:

[the street] dealers are careless nowadays. It used to be more concealed, now everything is easier, dealers are not scared anymore. (Dealer – 18 years old)

[The street] dealers are more careless now, they are just after money. Dealers used to have a tight group around them. Now there's a lot of grasses, no more trust. The police also offer users money for information on dealers. (User-dealer – 34 years old)

The view of market participants was that no amount of enforcement or community action would rid this particular area of its drug market. It was an established, thriving, profitable market which had been in place for a number of decades. Its longevity might also be explained when one examines how it and the subsidiary market in stolen goods benefited some local residents.

From open to closed

Until the mid-1990s, open street-based markets in the United Kingdom were probably where most illicit drugs of dependency were bought and sold. With the steady rise in market activity, communities tired of their visibility and the damage they caused demanded a police response. Quite separately, but around the same time, there was an upsurge in the ownership and use of mobile phones, which enabled open street-based markets to adapt and evolve into closed delivery-based markets. The pace of change was so rapid that ethnographic work conducted in Britain before the mid-1990s can now only serve as a very partial guide to the way in which retail drug markets function.

The advent of mobile phone technology was perhaps the most significant enabler providing the impetus for open markets to change into closed ones. Mobile phones minimized the risks associated with illicit transactions by making telephone surveillance largely impractical (Natarajan et al. 1995; Natarajan and Hough 2000). In addition, the proliferation in the ways in which telephone air time can be bought – or stolen – has now rendered buyers untraceable and traditional enforcement methods impotent. In one of our drug market studies (May et al. 2001b), we found that respondents conducted all transactions using either pagers or mobile phones, which they replaced frequently. Two respondents also reported using walkie-talkies and scanners. The walkie-talkies were, however, used to alleviate the boredom of

a normal selling day, not to disrupt any policing initiatives. The end result for drug markets was that by the mid-1990s, nearly all open markets had been given both the impetus and the means to adapt and evolve into closed delivery-based markets.

Closed markets

Closed markets are ones in which sellers and buyers will only do business together if they know and trust one another or if a third party vouches for them. The degree to which markets are closed – the barriers to access put in the way of new buyers – will depend largely on the level of threat posed by the police; intensive policing can quickly transform open markets into closed ones. Johnson and colleagues (2000) describe the evolution of New York City crack markets, which moved from open systems to closed ones in response to enforcement, throughout the decade covered by their research. Similar patterns of adaptation have been described by Hamid (1998), Edmunds et al. (1996), and May et al. (2001b) in Britain.

The strength of closed markets is the trust that can lie between buyer and seller. There are, however, counterbalancing disadvantages for both sellers and buyers. The former are unable to “pick up” passing trade and therefore unable to maximize their profits. The latter are tied in to the limited choices offered by the sellers they know. However, participants prefer this type of market in which to conduct “business” as the risk of attracting police attention is greatly reduced, credit is often available (to trusted customers), the perceived purity is better, and the weight offered is often correct. All of these benefits tend to be less apparent in the open street-based market. When examining three sex and drug markets in Britain we found that sex workers who bought from a closed market system valued the stability of supply, the quality of the drugs purchased, and the trust between themselves and their seller (May et al. 1999). Below we describe a closed British drug market (Wyatt) we studied in 2005 (May et al. 2005) that had previously been open. The transformation from open to closed had taken place in the mid-1990s.

Wyatt

Although Wyatt is situated a short distance from a thriving metropolitan city center, it was described as run down and deprived. The area has high unemployment rates and over half of the residents of Wyatt live in social housing, many living on state-funded benefits. Besides local residents, Wyatt has few visitors except those passing through looking to buy drugs or sex.

Wyatt’s drug market

Wyatt’s drug market is situated within a contained geographical area and was considered stable by nearly all participants. It was reported to have operated in

much the same way for a number of years. The built environment lent itself particularly well to both drug use and selling as there are a number of alleys inaccessible to cars, and houses back onto one another, enabling drug market participants to conduct transactions in relative privacy. There was no fixed open selling site as nearly all drugs were sold through a closed market system. Most transactions, however, were conducted in public places. Wyatt was not known to have any active or problematic dealing houses. Although the market had experienced competition from neighboring areas over drug selling and territory, in recent years it had enjoyed a period of relative calm. Respondents described the market as particularly active, stating that heroin and crack were readily available, as were most other drugs. Drug users were spending between £100 and £1,000 per week on drugs; the average was £250 per week. The market operated 24 hours a day seven days a week. Nearly all transactions were arranged via mobile phones, with runners meeting drug users in public places to exchange drugs and money.

Selling in Wyatt

Drug selling in Wyatt was based around clusters of structured top-down hierarchies, controlled by small handfuls of wholesale suppliers. Most respondents stated that selling was controlled by local families and friendship groups, and generally reflected the wider community. The market was described by some as a “closed shop” in terms of setting up to sell. Outsiders were not welcomed and undoubtedly would either be asked to stop selling or else made to sell for others, probably as a runner. There was a general perception from interviewees that all drug sellers were “born and bred” in the area. As one Wyatt seller told us:

You’ve got to be in with the big boys. You can’t just pitch up and sell. Families control selling ... there’s a mix of ethnicities. Most are born and bred in the area so folk put up with them. If they go away though, another pops up.

The market in Wyatt relied upon young runners, local to the area, to deliver drugs to users. Rarely were sellers seen operating at street level, and during our site visits we only ever saw runners actively engaged in selling. Most runners we spoke to were not drug users and expressed a strong dislike for those to whom they sold. Although vital to the market, the runners knew nothing about supply above street level. The runners were described by users and sellers as:

It’s young lads from 14–24. It’s very rare to get users running for sellers, they’re just not trusted. Young people are begging the dealers to let them in [to the market].

It’s mainly kids on bikes; they’re 12 upwards, from the area, and none use.

They [runners] have a massive role to play. Through growing up here, most of the runners know the dealers so it's easy to start running. They are all young boys, they're getting younger [from] 9-16. They're all from the estate.

The drug market in Wyatt was well established and lively. Although there was friction between the younger residents and drug users, friction between the runners, sellers, and local residents was less marked. Many local residents in the area tolerated the drug market as it was relatively out of sight and because it was staffed by young people whom many residents had known since they were very young. Alongside the drug market was a thriving market for stolen goods, which benefited drug users, dealers, and local residents.

Crack/Dealing-House Markets

Over the past 20 years, a new type of drug market has evolved – “crack-house markets.” The term has, however, become something of a misnomer, as crack houses have evolved to sell both heroin and crack; it is probably less misleading to refer to them as “dealing-house markets.” Dealing houses are a range of properties from which drugs are sold. They can be residential, uninhabited, or semi-derelict, and are often only occupied for a short period until enforcement action closes them down (Webster, Hough, and Clancy 2001). Frequently, however, a dealing house will re-open at the same address, often shortly after it has been closed down. This was described by Webster and colleagues (2001) in their evaluation of a Metropolitan Police initiative that was designed as a coordinated program targeting low-level drug dealing across London. The sophistication of this market is variable, with some properties being highly organized and very resilient to enforcement, others less so. Some operate simply as retail outlets; in others, drugs are bought and used in the property. Other services such as commercial sex are sometimes also available.

Dealing houses were a natural progression from closed markets as they provided a static indoor location. One could view them as having the combined benefits of both the open and closed market systems. They also provided crack users with a “safe” place to smoke the drugs they had purchased. While crack houses started as places to consume drugs, they quickly developed into using and selling locations. In some areas, dealing houses attract large numbers of buyers often calling throughout the day and night and are often associated with antisocial behavior both within the property and in the surrounding outside area. While it may be obvious to both police and other residents that a crack/dealing house is in operation, it is often difficult to get sufficient evidence to secure convictions and close down the site. Although new civil and criminal powers have been introduced in Britain, it still remains true that relatively low-level door security will buy participants enough time to dispose of any drugs that are on the property.

It is unclear what share of the crack market is conducted in open markets, closed markets/networks, and crack/dealing houses. However, while dealing houses remain fairly well protected from enforcement activities, it would be safe to assume that their share of the crack market – at least in British inner cities – is considerable. Below we describe one English dealing-house market, which we (May et al. 2005) studied.

Mardy Vale

Like many other inner-city areas, Mardy Vale had a particularly active closed heroin and crack market. All illicit drugs were obtainable all day, every day. While there was no fixed open street market, there were several dealing houses located in and around three tower blocks, and a closed street-based delivery system. The dealing houses were described as having a short lifespan, and were constantly in a state of flux. As soon as one closed another opened, or they re-opened at the same address. As one police officer said:

When we are closing down a crack house another will open elsewhere, and another will move on.

It was difficult to estimate how many dealing houses were open at any one time. However, respondents generally thought the number was around 10. Police intelligence confirmed that this figure was likely to be quite accurate. Premises which were turned into dealing houses often belonged to “vulnerable” tenants who professional respondents stated were frequently bullied, coerced, or seduced⁴ into letting their property be used. Empty properties in and around Mardy Vale were also targeted and then turned into dealing houses. One interviewee did just this and described how she “acquired” and then “sold” properties to other dealers.

I go somewhere empty, break in, and put a gate on the door and change the locks. I’ll ask another dealer if he wants it. Since I’ve paid for the gate I’ll say £200 up front, then part of the profits.

In one of the dealing houses in Mardy Vale, transactions took place 24 hours a day seven days a week; this particular house allowed buyers to stay while they smoked their crack. Sex workers often brought their clients to the property to exchange money for sex; sex workers would often encourage their clients to buy crack from the sellers at the house, which they would then share. The tenant of the property was paid in weed and cans of Special Brew.⁵ On a busy day, the turnover of the house was in excess of £2,000.

Open Surface Web and Closed Deep Web Markets

Having explored the functioning of “open” and “closed” markets, we now examine the Internet and how it has reconfigured the shape and nature of contemporary (primarily “recreational”⁶) drug markets. In recent years, the Internet has opened up a virtual space for the discussion of legal and illegal drug use alongside becoming a virtual conduit for their sale and purchase (van Buskirk et al. 2014). Adhering to the traditional/offline⁷ market principles of supply and demand and responsive to the “voracious appetite” (Measham et al. 2010: 19) of drug consumers, new online supermarkets, which stock both legal and illegal drugs, have created new challenges for drug policy, public health services, and law enforcement in the United Kingdom and across the world. Viewed through a Darwinian lens and following the logic of e-commerce (Barratt et al. 2014), the emergence of an online marketplace reflects the natural progression in the evolution of market trading. While the Internet provides a new platform for the trade of legal and illegal drugs, this only accounts for a small fraction of drug market transactions. For example, in 2014, the consumer markets for heroin and crack have continued to operate predominantly offline, with trading conducted primarily through the traditional open and closed market⁸ structure, mainly due to the nature of problematic use and the need to buy and consume drugs very much in the here and now. Nonetheless, the alarming growth of online drug markets and the global dispersal of manufacturers, website hosts, and consumers (EMCDDA 2014: 29) have led commentators to question whether “the sheer force of consumer demand, in combination with the ‘unpoliceability’ of the Internet, [will] be the unmaking of global prohibition?” (Walsh 2011: 60).

In examining these challenges, firstly we look at the emergence of the open “surface web” marketplace for novel psychoactive substances (NPS), or “legal highs” as they are colloquially known, and their impact on recreational drug markets in the United Kingdom. In particular, the focus is on the online market for amphetamine-type stimulants (ATS), namely mephedrone (4-methyl-N-methylcathinone), “m-cat,” or “meow meow” as it is popularly known, belonging to the substituted cathinone⁹ family. We then move on to focus on the parallel emergence of closed-access markets or “cryptomarkets” (Martin 2013) located on the “deep web,” which through the use of encrypted software facilitates the sale and purchase of many illegal goods, including illegal drugs. In forecasting the future direction of drug markets, it has been suggested that:

Just as computers changed the way we manage and consume information, cryptomarkets have the potential to change how drug markets operate in a way that may set back regulation efforts by decades. (Aldridge and Décary-Héту 2014: 20)

Not long after the FBI’s seizure of the infamous cryptomarket *Silk Road*, a second incarnation – *Silk Road 2.0* – alongside a list of other darknet sites was born (Digital Citizens Alliance 2014), highlighting the agility of virtual drug markets in responding to the threat of enforcement (van Buskirk et al. 2014). By juxtaposing “open”

surface web markets and “closed” darknet markets for the trade of legal and illegal drugs, we demonstrate how the Internet has reshaped conventional perceptions of drug markets and, in doing so, has raised questions about how drug policymakers and law enforcement personnel can, if at all, keep abreast of these changes.

From Head Shops to the Internet: The Emergence of an Online Marketplace for NPS

High street head shops¹⁰ and music festival stalls were among the first market retailers of NPS in the United Kingdom. However, due in part to police enforcement activity targeting NPS suppliers and the profit-making potential of the Internet, offline NPS market suppliers migrated online. Since then, Internet-based marketing has facilitated its rapid growth (Corazza et al. 2013; Deluca et al. 2012; Walsh 2011; Winstock et al. 2010; Measham et al. 2010). Globalization and advances in information technology – “the twin engines” (Griffiths et al. 2013: 1701) – alongside growing disenchantment with the purity and quality of controlled drugs, namely, ecstasy pills and cocaine powder, throughout the 2000s (Measham et al. 2010; Winstock et al. 2011; Newcombe 2009) opened a window of opportunity for a new virtual marketplace for legal alternatives to illegal drugs.¹¹ The growth of the market is reflected in the United Nations World Drug Report (UNODC 2014) which stated that the number of NPS reported to the UNODC had increased from 251 in 2012 to 348 in 2013. NPS are manufactured in China and India and then imported into Europe where they are repackaged and sold (Griffiths et al. 2013). Importation of these substances is via the postal system, mainly through traffickers (UK Focal Point Report 2013: 183). It has, however, been argued that the availability of these substances is not an entirely new phenomenon, with many of these products synthesized and patented over three decades ago (UNODC 2013).

Substances have been produced and marketed with the explicit aim of circumventing legislative restrictions for several decades. What has changed is an increase in their range, potency, profile and availability. (Winstock and Ramsey 2010)

Findings from the Mixmag Global Drugs Survey (2013) found that 53% of respondents (n = over 22,000) bought “research chemicals” (NPS) over the Internet. In examining the multiple sources from which research chemicals were purchased, this finding compared with 43% who purchased from a shop, 18% from a friend, and 9% from a dealer. Contextually, this is unsurprising given the growth of Internet use in the United Kingdom over recent decades (Hillebrand et al. 2010). Discussing the ease and convenience of purchasing NPS online, Measham et al. explained that

there are no restrictions to online purchase in terms of minimum age requirements, quantities or customer identification; nor is it necessary to acquire the requisite sub-cultural knowledge of illicit markets as is required to purchase illegal drugs. (2010: 16–17)

In addition to being the main vehicle through which these new products are retailed, the Internet has seen the growth of a virtual user-knowledge base on emerging drug trends which has been at the center of web-mapping research projects into the changing nature of recreational drug markets (see Deluca et al. 2012). For the “Facebook Generation,”¹² online social networking sites provide a safe space for the exchange of user “experiential knowledge” (Smith et al. 2009: 17), which has been evidenced with a rise in the use of mephedrone. In the absence – initially – of official advice about legal highs, most of what was known about NPS was anecdotal and exchanged on online user forums (Measham et al. 2010). Web sites such as Erowid aim to cultivate “a participatory culture, where users generate their own content, creating a collective intelligence about drugs, far superior to the propaganda of yesteryear” (Walsh 2011: 60).

There’s Something about Mephedrone

Against a backdrop of growing popularity and rising public health concerns about the circulation of NPS, in August 2009 the UK government announced that it was to ban three legal highs: BZP, GBL, and “Spice.” Even before the ban came into effect in December 2009, online retailers were advertising other legal alternatives to replace the banned substances. Critical of government moves, toxicologist Dr Ramsey stated:

There will always be something on the horizon that is falling outside the legislation...I can name you another five chemicals that are legal, but have similar effects to these analogues of MDMA. The law cannot keep up with what is happening on the street. (Cited in *Druglink* March/April 2009: 9)

In part, the UK ban on these products paved the way for a new legal market alternative – mephedrone (Measham et al. 2010). A number of key market factors contributed to the rise in mephedrone use, including “price, availability, value for money, sought-after effect and perceived legal and physiological harms” (Winstock and Ramsey 2010: 1685). The mephedrone market grew in popularity among clubbers, psychonauts,¹³ and polydrug users (Newcombe 2013). A market for mephedrone among clubbers was reflected in Mixmag’s Global Drug Survey in 2010,¹⁴ where mephedrone was ranked as the fourth most widely used substance in the last month after cannabis, ecstasy, and cocaine (Mixmag 2010).

Legislative Change and Market Adaptation¹⁵

Mephedrone and related cathinones were banned under generic legislation as a Class B substance in April 2010. In the absence of available scientific research, the threat of mephedrone and the NPS market more broadly has been viewed as a threat

of the unknown. In the midst of media hysteria about NPS, the deaths of two young men, which were purportedly linked to mephedrone, and mounting political pressure, these unknowns were not dispelled when the government proceeded with the speedy decision to ban mephedrone. However, research shows that there is no direct link between drug law enforcement and a reduction in use or drug availability (Reuter and Stevens 2007). Even before the ban was in place, users reported “stockpiling” mephedrone either for personal use or to sell once Internet sites had been closed down, resulting in the added harms associated with the emergence of an adulterated street-based market (Measham et al. 2010: 19).

In a post-ban survey of 150 mephedrone users in 2010 conducted online (Winstock et al. 2010), 63% of users reported continued use after the drug was banned and over half (55%) stated that they intended to continue using the same amount, highlighting the limited impact of the legislation in curtailing use (similar findings were also reported by McElrath and O’Neill [2011] based in Northern Ireland). Survey respondents reported that the average price of mephedrone had doubled since the ban and that users were now buying from street dealers as opposed to via the Internet prior to the ban (57% compared to pre-ban findings of 41%) (Winstock 2010).

As a window into changing drug use patterns and trends, a number of studies noted the continued prevalence of mephedrone use following the ban in dance settings (Wood et al. 2012; Moore et al. 2013; Bhardwa forthcoming). Findings from surveys conducted in two South London nightclubs found that over half (66%) of the 313 participants reported previous use of a legal high. Use of mephedrone, in comparison to other legal highs (i.e., methoxetamine 2%; 1-benzylpiperazine 1%, Spice/K2 1%; popradols 1%), was the most prevalent, with 53% reporting use in the last month. In addition, a higher number reported recent use of mephedrone than use of established drugs such as cocaine and MDMA/ecstasy (Wood et al. 2012). Rather than displacing established drugs, mephedrone could be viewed as an additive to polydrug-using repertoires (Moore et al. 2013). This corroborates with qualitative findings from an ethnography study conducted in three dance settings, where for many drug users who participated in specific dance scenes, mephedrone use featured prominently as part of their regular drug use repertoire (Bhardwa forthcoming).

However, some of the post-ban research has indicated a decline in mephedrone use. Results from Mixmag’s Global Drugs Survey in 2012 suggested that overall, use of mephedrone in the previous 12 months had fallen from 20% in 2012 (Mixmag 2012) to 14% in 2013. It could be argued that this is an example of temporary displacement, in which users may be drawn to a substance if it is a legal alternative but will return “to an illegal drug if the legal alternative is withdrawn”; this was noted with the synthetic cannabinoids following the reclassification of cannabis in 2009 (Hammersley 2010 referenced in Measham et al. 2010: 16). Hillebrand et al. argue that the market experiences a “balloon effect” in which “suppression of a product, for example, through drug legislation, drives the drug business to other geographical locations or products” (2010: 337).

Since the ban on mephedrone, a whole host of other legal NPS have flooded the market (e.g., NRG-1, Ivory Wave, Benzo Fury, MDAI, 2-DPMP, 5iaI, PMA, PMMA) and continue to do so. As part of the ongoing surveillance of the virtual marketplace, from the 2,000 samples obtained by the Forensic Early Warning System (FEWS) in the United Kingdom 27 substances were identified, of which 10 had not previously been seen there (Home Office 2012). In addition, with over 350 substances collectively monitored by the EU Early Warning System in 2013 and an influx of NPS appearing on the market, the system has come under increasing pressure to keep up to date with the changing market place (EMCDDA 2014).

Further, the market has responded to legislation by marketing “new” drugs that contain banned substances. For example, analysis by Brandt and colleagues (2010) found that the majority of naphyrone (commonly branded as “NRG-1” and “NRG-2”) they purchased online contained a mixture of banned cathinones which were being simply remarketed and sold online as naphyrone. In fact, only one of the 13 products they purchased actually contained the substance it was advertised as selling. Brandt et al. argue that not only do users face the risk of criminalization but they are also exposed to increased health harms, unaware of what it is they are buying.

Given the rapidity with which new products appear on the market, with one appearing every six days (APPG DPR 2013; Nutt and Hulbert 2014) and latest forecasts suggesting that “Deaths linked to ‘legal highs’ could overtake those linked to heroin by 2016” (The Centre for Social Justice 2014), the futility of law enforcement to keep up to date with these market changes needs to be met with new regulatory approaches (Seddon 2014; Hughes and Winstock 2011) and a greater emphasis on health education in order to respond to these threats.

From “Open” Legal to “Closed” Illegal Virtual Markets: The Birth of “Cryptomarkets”

Launched in 2011, the now banned web site Silk Road is an example of a “crypto-market” (Martin 2013; Barratt et al. 2014) – an encrypted web site which provides buyers and sellers anonymity for illicit trading. Research into the virtual darknet market is in its infancy, with only a handful of studies (e.g., Christin 2013; Aldridge and Décary-Héту 2014) that have used new web-crawling¹⁶ methods to elicit new market insights. Described as the “eBay of illicit drugs” (Martin 2013: 3; Barratt 2012), the success of Silk Road as a cyber-drugs market up until its closure by the FBI in the United States in October 2013 indicates how online communication and encryption technologies have transformed conventional drug distribution networks. Darknet websites are hosted and only accessible by those on The Onion Router (TOR) network, a free downloadable encryption software that enables the anonymous use of the darknet by redirecting IP addresses from their original location (Digital Citizens Alliance 2014). Through the use of TOR encryption software and Bitcoin – a “decentralized virtual currency” (Barratt et al. 2014: 1) – the identities of site users remain undetected (Barratt 2012), and as a result, law enforcement efforts

in fighting the global war on drugs has been thwarted (Martin 2013: 2). The site emerged in the midst of financial crisis and growing distrust of governments in protecting individuals and the state (Maurer et al. 2013). The market for online illicit goods has responded by developing “a new open-source online currency system” (Maurer et al. 2013: 261) founded on a virtual community of trust (Maurer et al. 2013; Van Hout and Bingham 2013). It is suggested that with direct drug market transactions between producers and consumers, bypassing intermediaries in the supply chain, the potential for violence and territorialism, commonly associated with the functioning of conventional offline drug markets, is largely removed (Martin 2013; Aldridge and Décary-Héту 2014). However, how some vendors have attempted to quash competition between darknet markets via D-DOS attacks,¹⁷ in what can be seen as a form of *virtual violence*, has been highlighted. In addition, there have been reports of “scam markets” responsible for stealing Bitcoins in the aftermath of Silk Road. It is suggested that the resulting customer distrust is among factors facilitating Silk Road’s 2.0 revival (Digital Citizens Alliance 2014).

Prior to closure, there were 13,000 drugs listed on the Silk Road site (this compares with the second largest retailer Black Market Reloaded, which listed 3,567 drugs). Even after the closure of the first Silk Road site, Silk Road 2.0 has continued to outsell its market competitors (i.e., Agora, Pandora Openmarket), listing 13,648 drugs on its site (Digital Citizens Alliance 2014: 22). In countering the view that the Silk Road marketplace is an “eBay for illicit drugs” whereby customers purchase drugs for personal use, Aldridge and Décary-Héту (2014), using data (i.e., price and quantity listings) downloaded by a web crawler prior to the closure of the web site, demonstrated that the web site was predominantly used by drug dealers to purchase stock to resale in what can be described as “business-to-business” transactions.

We show that Silk Road is best characterised as the very location for the middle level of the drug market. Indeed, Silk Road seems to have functioned as a virtual broker, connecting upper, middle and retail level sellers. (Aldridge and Décary-Héту 2014: 16)

Darknet transactions

Christin (2013) conducted a web crawl through Silk Road over a six-month period in 2012 and discovered that 16 of the 20 most popular items sold on the web site were drugs (“weed” being the most popular product for sale). Most items listed on the site did, however, have a short lifespan, disappearing within three weeks of being listed or, for other products, being delisted within three days. This is likely to be for a number of reasons, such as the product selling out and becoming no longer available, or products being resold under different names. During the data collection period, 1,239 unique sellers were listed on the site, of which 112 could be identified as “core” sellers. The study found that most items were shipped from the United States and secondly the United Kingdom.

Barratt (2012), reporting findings from the online Global Drugs Survey (of English-speaking respondents), indicated that 18% of US, 10% of UK, and 7% of Australian survey respondents ($n = 9,470$) had consumed illegal drugs that had been purchased from the Silk Road web site. MDMA, cannabis, and LSD were the most popularly purchased drugs from the Silk Road marketplace. Mirroring broader e-commerce trends, survey respondents cited greater range, better quality, convenience, and user-based product ratings as reasons for purchasing drugs via Silk Road. Interestingly, the preferences given by these market participants echo those of buyers in the traditional closed heroin and crack markets when discussing why they purchase from closed heroin and crack markets as opposed to open ones. However, the study highlighted that there were “country-specific deterrents and market characteristics” (2012: 1); for example, the risk of being caught by police or customs (which was more likely to be cited by US and Australian respondents than UK respondents), or pre-existing networks from which access to drugs was readily available influenced respondent decisions not to purchase drugs via the Silk Road web site. These findings highlight how the online Silk Road marketplace cannot be understood in isolation from offline markets. The convergence of on/offline drug marketplaces was also highlighted, with the declining availability and quality of the street-based stimulant market which facilitated the online popularity of mephedrone prior to its ban (Measham et al. 2010).

The Silk Road marketplace for the trade of illegal drugs presents “new ways of doing old things.” Behind the smokescreen of a legitimate shop “front,” criminal entrepreneurs are able to outwit law enforcement through the use of encryption technology and virtual currency. The impact of these new methods on the shape and functioning of offline illegal drug markets is yet to be seen.

The Impact of Enforcement on Availability, Purity, and Price

In the United Kingdom, the relationship between supply, demand, and enforcement remains poorly conceptualized, under-researched, and insufficiently understood. It is widely recognized that enforcement activity has little impact on day-to-day drug market operations (Reuter and Stevens 2007; UKDPC 2009) other than temporary displacement (May and Hough 2004). It can, however, cause significant harm to the health of drug users and to the social well-being of communities, as illustrated by Kerr and colleagues (2005). Another perverse consequence, highlighted by Maher and Dixon (1999, 2001), is the potential for drug market violence to increase in response to enforcement activity. This is due to the risk-averse sellers exiting the market, leaving the risk takers to trade, which can sometimes result in an increase in violent episodes in illicit street markets; drug market violence can also increase during droughts caused by enforcement activity. While some commentators argue that markets are supply led, others believe the contrary; the reality is probably that the two have a dynamic and symbiotic relationship. In 2003, UK government analysts suggested that for enforcement activity to have any impact on illicit markets there

would have to be sustained seizure rates (of heroin and crack) of between 60% and 80% of the market. In 2003, 12% of the heroin market and 9% of the crack market, respectively, were seized (Pudney et al. 2006: 83). While enforcement activity may disrupt an illicit market for a day or two, it is hard to accept that enforcement alone will have any long-term impact locally, nationally, globally, or indeed virtually (Harocopos and Hough 2005; Lister et al. 2008; May et al. 2005).

We know very little about the ways in which supply-reduction strategies impact on prices and the ways in which price is related to demand. Economic theory would lead us to think that prohibition and enforcement strategies are ways of increasing prices. There are two ways in which this could happen. First, the simple process of removing drugs from the distribution system should increase scarcity and thus increase price. Secondly, the increased risks imposed by enforcement activity should be translated into higher prices. In reality, the prices of most illicit drugs in Britain have been either stable or falling. The cash price per gram of both heroin and cocaine has fallen quite steeply in recent years, even if the unit of purchase remains the same.¹⁸ This does not necessarily mean that supply-reduction strategies have been without impact; it is plausible that the price fall would have been steeper in the absence of these strategies. There is a fairly strong case to be made, however, that supply-reduction strategies have been insufficient to maintain or increase prices.

There are several possible reasons for the insensitivity of prices to enforcement. One possibility is that participants in illicit markets operate in much more of an information vacuum than is generally recognized. Economic theory about markets generally assumes that organizations enjoy an information-rich environment that allows them to assess how elastic or inelastic demand may be in response to price variation. In other words, pricing is fine-tuned to maximize profit. Those who sell illicit goods may set their prices less by an informed assessment of what the market will bear at any given time and more by their experience of what has worked well in the past. In other words, this group can be thought of as “profit satisficers,” not maximizers. This is likely to hold true the more that distribution systems are populated by networks of casual entrepreneurs.

A number of writers (e.g., Reuter and Stevens 2007; Best et al. 2001) have focused on the *adaptations* which distribution systems make to enforcement, and on the *perverse effects* which apparently effective enforcement may bring. The main possible adaptation is the replacement of personnel – where others take over the functions of those who have been arrested. Where there is a buyer’s market, it is obvious how this process could undercut the impact of enforcement: removing a few sellers from an oversupplied market will not increase scarcity at all; at best it will stop prices from sliding.

One of the perverse effects of supply-reduction strategies is that by the very act of sustaining prices – if this can actually be achieved – the market will be stimulated as it draws new “players” into the system. On this premise, enforcement can be successful in sustaining or increasing risks of criminal sanction, as these risks are translated into maintained or increased prices; however, the net result is likely to be that more people are attracted into the highly lucrative – if risky – drug business. Indeed,

effective enforcement should drive out the risk-averse from the marketplace while drawing in the risk-tolerant. If this argument holds up, successful enforcement strategies contain the seeds of their own failure.

Conclusions

This draws us to the conclusion that drug markets have never been – and cannot be – effectively controlled through enforcement of the criminal law alone. This should hardly be a contentious conclusion, given that over the past 40 years drug markets have flourished despite the relentless “war on drugs” that has taken place. As we have seen, drug markets change, transform, and adapt to enforcement alongside other market factors – rarely do they go away. Drug markets in Britain appear to be at another crossroad: how will legislators, the police, and harm-reduction agencies react to the rapidly expanding market in NPS, and how will the heroin and crack markets react to the rapidly expanding online market place?

It is impossible to predict precisely what shape markets will take in the next five to ten years. While it is certain that they will evolve – one way or another – the actual shape they take will probably depend on the interaction between developments in enforcement and selling technology. The speed with which new NPS are manufactured, coupled with the costs associated with heroin and crack use (£15 billion in 2010¹⁹), should lead policymakers to engage with questions about the likely impact of a radical change to the criminal law. If markets continue to prove highly resilient in the face of enforcement, the pressure to re-examine the current legislative structure for controlling drugs should be overwhelming.

Notes

- 1 Other researchers who have also examined drug use, markets, and distribution networks from an ethnographic perspective include: Coomber 2004, 2010; Dorn et al. 1992; Duffy et al. 2007; Hales and Hobbs 2010; Lewis 1994; Lupton et al. 2002; May et al. 2001a, 2001b, 2005, 2008; McKeganey and Barnard 1996; Murji 2007; Pearson and Hobbs 2001; Penfold et al. 2005; South 2004. This list provides the names of a small number of qualitative researchers; it should not be viewed in any way as a comprehensive or definitive list.
- 2 Interestingly, it was the work of Eck that formed the foundation of the work of May and colleagues in their analysis of illicit drug markets in England and Wales using an ethnographic qualitative approach.
- 3 The following market descriptions draw heavily on drug market research that has been conducted by researchers at the Institute for Criminal Policy Research, Birkbeck, University of London.
- 4 This was usually done by offering tenants alcohol or drugs in exchange for using their properties.
- 5 Special Brew is a super-strength lager. One can exceeds the recommended daily allowance of alcohol units.

- 6 Moving away from the above focus on street-based Class A heroin and crack-cocaine drug markets, which are usually associated with “problematic” drug use, and recognizing that typologies of problematic-recreational drug use (Newcombe 2007) are flawed constructs (see Coomber et al. 2013; UK Focal Point Report 2013; McSweeney and Turnbull 2007), the emergent market for NPS is located at the “recreational” end of the market spectrum.
- 7 In this context, offline markets refer to the traditional open and closed markets discussed in the first half of this chapter.
- 8 This is not, however, to say that the traffickers of heroin and crack have not moved their operations to the darknet.
- 9 Cathinones are derivatives from the Khat plant and closely chemically related to amphetamines.
- 10 Head shops specialize in the sale of drug paraphernalia.
- 11 Marketed as “Not for Human Consumption,” NPS mimic the effects of illegal drugs but are not yet controlled under the Misuse of Drugs Act (1971). Public health concerns about the readily available substances have centered on the marketing of these substances as legal, which has often been translated to mean safe (Sheridan and Butler 2009). Further, it has been argued that confusion surrounding the legal status of these products is compounded once a legal high becomes subject to control (Corazza et al. 2013).
- 12 Fleming (2010).
- 13 Psychonauts is the term given to those interested in experimenting with altered states.
- 14 http://issuu.com/hayden_russell/docs/drugs_survey/1?e=0 [Accessed: 01.08.2014].
- 15 Alongside importation orders and generic legislation, the government responded to the speed and manufacture of NPS appearing on the market by introducing Temporary Class Drug Orders (TCDOs) under the Police Reform and Social Responsibility Act 2011. In consultation with the ACMD, a substance can come under a 12-month temporary ban while evidence regarding its potential harms is gathered and analyzed. The rationale of this temporary ban is aimed at tackling supply and not possession. For a critique see Measham and Stevens (2014).
- 16 Relatively new to criminology, web-crawling technologies are being used to download web page content in a systematic manner (see Aldridge and Décary-Héту [2014] for further details).
- 17 A Distributed Denial of Service (D-DOS) attack shuts down access to web sites.
- 18 A £10 wrap of heroin and a £10 rock of crack.
- 19 HM Government (2010).

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Part VII

Drugs as an Illicit Enterprise

The Criminalization of (Some) Drug-Involved People

Neil McKeganey

Introduction

The year 2012 may turn out to be a watershed year in terms of the evolution of global drugs policy. In that year the United States, long regarded as the architect of what is often referred to as the “war on drugs,” saw the state of Colorado pass laws making it legal to purchase, use, and grow marijuana for medical and recreational purposes. In the aftermath of that legislative change, a slew of US states appear to be moving forward with some form of relaxation of the criminal justice penalties associated with marijuana use and possession. For example, within Washington State it is now legal for anyone over the age of 21 to carry one ounce of marijuana. Other states that are either seeking to liberalize their laws relating to marijuana or which have already done so include: California, Connecticut, Vermont, Oregon, and others, most of which have now accepted the case for the use of medical marijuana even if they have not yet legalized its use for recreational purposes.

The relaxation of criminal penalties for some forms of drugs possession goes well beyond the domestic situation within the United States. Within Portugal, for example, the possession of all drugs for personal use was effectively decriminalized in 2002, and in 2013 the government of Uruguay became the first country in the world to make the possession, use, and cultivation of cannabis fully legal – thereby enabling the drug to become an entirely legitimate part of the Uruguayan economy. Within the Netherlands, while the use and possession of cannabis remains a criminal offense, the government has pursued a policy of decriminalization that has effectively allowed coffee shops to sell the drug openly to locals and tourists for decades without fear of criminal prosecution.

While virtually every country across the globe continues to utilize some aspects of the criminal law in how they are responding to their drug problem, there has been a growing momentum toward removing or relaxing criminal penalties from at least some forms of drug use. Within the context of those developments it is timely to consider the case for criminalizing at least some forms of drugs use and drugs users. In this chapter I look at the various arguments that have been set out in favor of weakening the contribution of criminal justice agencies in tackling drugs use.

Drug Use is a Health Issue Not a Criminal Justice Issue

Increasingly over the past few years there has been a growing chorus of voices making the case that drug use should be seen as a health rather than a criminal justice issue, and that as a result health agencies rather than criminal justice or enforcement agencies should take the lead in shaping drugs policies. The Global Commission on Drug Policy, comprising such influential figures as the former Secretary General of the UN Kofi Annan, former US Secretary of State George Schulz, former Prime Minister of Greece George Papandreou, and the entrepreneur Sir Richard Branson, among others, has advocated that drug use should be seen principally as a health issue and that drug users should be dealt with as patients rather than criminals. Rather than focusing on enforcement, drug policies should, the Commission have urged, ensure that drug users are provided with a variety of treatment modalities, including:

methadone and buprenorphine treatment but also the heroin-assisted treatment programs that have proven successful in many European countries and Canada. Implement syringe access and other harm-reduction measures that have proven effective in reducing transmission of HIV and other blood-borne infections as well as fatal overdoses. Respect the human rights of people who use drugs. Abolish abusive practices carried out in the name of treatment – such as forced detention, forced labour, and physical or psychological abuse – that contravene human rights standards and norms or that remove the right to self-determination. (Global Commission on Drug Policy 2011:2–3)

The argument that drug use should be seen as a health, rather than a criminal justice, issue has been advanced by politicians (Huppert 2012); political advisors (Fields 2009); lobbyists (Nadelmann 2013); academics (Bewley-Taylor, Trace, and Stevens 2005); and senior police professionals (Lopez 2012; McDonald 2013). However, the case that drug users should be dealt with as patients rather than criminals presupposes an exclusivity between treatment and enforcement that is far from being the reality in many countries. For example, court-ordered treatment and the provision of drug treatment in prison are key components of how many countries are responding to their drug problem.

Among those advocating for legalization, the removal of criminal justice penalties for some or all forms of drug use is a *sine qua non* of the policies they are promoting.

However, even if one were to accept that drug use itself ought not to be grounds upon which to impose a custodial sentence, there is still the issue of how society responds to those drug users who are committing criminal acts. We know from the multitude of studies involving the drug testing of arrestees that a substantial proportion of those arrested for a wide variety of crimes test positive for the presence of a range of illegal drugs (US Department of Justice 2002; Office of National Drug Control Policy 2013). While it may be accepted that in many instances the individual's offending history is connected to their drug use, to accept the proposition that they should thereby be divested of any responsibility for the criminal acts they have carried out is deeply controversial. In effect the proposition here would be to develop a twin-track justice system in which non-addict offenders were dealt with in one way (possibly receiving a custodial sentence for their offending), while drug-dependent offenders committing the same criminal act would be dealt with through the provision of drug treatment. There would be a fundamental inequity within such a system which would in effect amount to a penalty directed toward those whose offending was not seen to be connected to any drug use or misuse. Far better in fact to ensure that offenders, whether drug users or not, are dealt with in the same way by the criminal justice system while ensuring that appropriate drug treatment services are provided within the prison system.

While it has been suggested that drug use should be dealt with as a health rather than a criminal justice issue, there is of course an uncertainty even within that formulation as to whether the drug use at issue is of a dependent kind or is of a more volitional nature. While it may be accepted that the individual who is drug dependent may be compelled to fund his or her drug use in any way possible (including through the commission of criminal acts), the same cannot be said for the individual whose drug use is more volitional. While it may be said that there is an obligation to ensure that those offenders who have become drug dependent should have access to addiction treatment services within prison, the case for providing a treatment response in the case of those whose drug use is more volitional is by no means as compelling.

Although almost all drug treatment agencies are familiar with the provision of services for those who have become drug dependent, it is not at all clear what the role of treatment should be in relation to those whose drug use is of a more volitional nature and has not yet reached the level where they would be regarded as drug dependent. In the absence of such dependence it is questionable whether drug treatment services can or should have a role in treating individuals. Indeed, from some drug user rights perspectives there has been a powerful rejection of the view that even dependent drug users should be seen as patients needing treatment:

Whatever one's views on the value of the use of the term recovery (I don't personally find it helpful, as I do not see habitual drug use as an illness to be recovered from, but rather a behaviour that people engage in), the insistence that the only satisfactory or successful outcome of an engagement with drug dependence services is abstinence is unrealistic and contrary to the well established evidence enshrined in all internationally accepted guidelines... (Ross-Albers 2013:15)

In recognition of the limited and contested contribution of drug treatment in responding to individuals' drug use, it is hard to see the case for making treatment the predominant response to drug use, in contrast to combining elements of both treatment and enforcement in how societies tackle their drug problem.

The Global War on Drugs Has Failed

The case that drug use should be dealt with as a health rather than a criminal justice matter is often allied to the belief that current efforts to utilize the criminal law in tackling the use of various substances have simply failed to stop the proliferation of various forms of drug use. Again the Global Commission on Drug Policy has asserted that:

The global war on drugs has failed, with devastating consequences for individuals and societies around the world. Fifty years after the initiation of the UN Single Convention on Narcotic Drugs, and 40 years after President Nixon launched the US government's war on drugs, fundamental reforms in national and global drug control policies are urgently needed.

Vast expenditures on criminalization and repressive measures directed at producers, traffickers and consumers of illegal drugs have clearly failed to effectively curtail supply or consumption. (Global Commission on Drug Policy 2011:2)

The view here is that the continued availability of illegal drugs in virtually every country in the world is testimony to the inability to tackle drug use through recourse to the criminal justice system.

There are two issues that it is worth considering here. First, the assertion that the global war on drugs has failed because drug use persists is too extreme as an assessment – one would never suggest, for example, that the laws on homicide have failed because individuals continue to murder each other or that the laws on burglary have failed because some individuals continue to burglarize properties. The fact that some individuals continue to use illegal drugs, despite their being illegal, cannot be cited as the basis upon which the drugs laws themselves should be discarded. Rather the fact that some individuals continue to use illegal drugs despite the illegality of the substances involved could equally be taken as the reason why the laws are required in the first place, expressing, as they do, societies' refusal to authorize all forms of drug use.

Implicit within the belief that the existing drug laws have failed is the claim that the money currently directed toward the criminal justice system would be more effectively directed toward providing health or educational services targeted at those using or at risk of using a variety of drugs. Here again there is a false polarity underpinning this proposal in which it is assumed that even in the event of full legalization there would be no need for any continuing involvement of the criminal justice agencies. In a situation within which a national government made the production,

consumption, and trafficking of certain drugs fully legal (as has happened within Uruguay), there is still going to be a continuing need for enforcement agencies to police the reconfigured drug laws effectively. Within the US state of Colorado, for example, the legalization of marijuana use within the state has not meant that there is no longer any requirement to provide a criminal justice input into the production, transportation, sale, and use of the drug within that particular state or to ensure that Colorado does not generate a burgeoning interstate drug economy. In effect, then, there is a continuing need to provide criminal justice input even in a situation where possession, sale, and use of a drug have become legal.

Setting aside the continuing need to provide some form of criminal justice input even in the event that certain drugs were to become fully legal, there is the question of whether it is accurate to assert that the criminalization of some forms of drugs use does indeed represent a policy failure. Perhaps the strongest argument against the “war on drugs has failed” proposition is the comparison between the prevalence in use of legal drugs and the prevalence in use of illegal drugs. Within the United States, 18.1% of adults are current smokers (Center for Disease Control 2014). According to the UN, smoking is thought to account for around 5 million deaths a year, presently estimated to become 8 million deaths a year by 2030. Smoking is thought to cost the United States in excess of \$289 billion a year, combining medical care costs in excess of \$133 billion and lost productivity costs of around \$156 billion (CDC 2014). Similarly, within the United States, around 51% of adults are regular drinkers of alcohol and around 88,000 deaths a year are linked in some way to alcohol (CDC 2014). The economic cost of excessive alcohol consumption was estimated in 2006 to be of the order of \$223 billion a year. Compared to these figures it is estimated that 9.2% of the US population have used an illicit drug in the last month, with around 7.3% of those aged 12 or older having used cannabis in the last month. According to the United Nations, approximately 0.4% of the world’s population have used opiate-based drugs. Across Europe, the prevalence of heroin use rarely exceeds 1–1.5% of the adult population, while the prevalence of cocaine use is thought to be around 9% of the adult population and the annual prevalence of cannabis use is thought to be around 5.6% (United Nations 2013). Comparing the prevalence of legal and illegal drug use, it is hard to conclude that the existing drug laws within and between countries have had no impact in deterring use.

The Contribution of Criminal Justice Agencies in Responding to Drugs Use Leads to an Increase Rather than a Decrease in Harm

The case against the use of criminal justice agencies in how countries respond to illegal drugs use has led some commentators to characterize some forms of robust drugs enforcement as amounting to a public health hazard. Fitzgerald has commented that:

Given our knowledge that aggressive styles of anti drug policing contribute significantly to the spread of blood borne viruses, it is not too extreme to say that aggressive anti drug street policing is itself a public health menace. (Fitzgerald 2005:203)

Similarly, Maher and Dixon (1999) analyzed the impact of street policing of drug users within Australia and identified a number of ways in which local enforcement activities had led to a range of adverse unintended consequences (1999:496). As a result of police action, individuals more likely to store or hide drugs orally or nasally as a way of reducing the likelihood of their being arrested. As local police became aware of such practices they were more inclined to apply risky chokeholds when arresting drug users as a way of reducing the likelihood of their swallowing the evidence of their drug use. Other unintended health-hazardous consequences of local drug enforcement included drug users being reluctant to carry injecting equipment for fear that such equipment might be used as evidence of their drug use, drug users hurrying their drug preparation as they sought to reduce their visibility to local police, the displacement of drug use from one area to another as users sought to reduce the likelihood of being arrested, and the disruption to the social organization of local drug markets with new drug dealers seeking to replace those that had been previously arrested. In these various ways street policing of local drug markets can, the authors propose, lead to an increase rather than a decrease in the harms associated with illegal drug use.

While there can be little doubt that some forms of drug enforcement activity can result in harms to drug users, it should be recognized that accepting that point is not the same thing as asserting that all forms of drug enforcement activity are harmful or indeed that even fairly robust forms of policing will not on occasion be beneficial for drug users. In an evaluation of three major drug enforcement operations within Scotland, McGallagly and McKeganey found that in the immediate aftermath of the police operations there was a marked increase in the number of drug users contacting local drug treatment services (McGallagly and McKeganey 2013). Drug enforcement can then be a spur to treatment rather than an alternative to treatment.

Criminalizing Certain Drugs Increases Their Value

It has been acknowledged by the former head of the United Nations Office on Drugs and Crime that one of the consequences of making certain drugs illegal is that the price of those drugs on the black market increases immeasurably. For those who advocate in favor of drugs legalization, the difference between the farm gate price of illegal drugs and the price at which those drugs are being sold on the streets is a perverse outcome of the current global regime of drugs control. However, the inflated price of certain drugs (relative to the cost of their production) does not have to be seen as a negative. Currently there are a number of countries that are exploring the policy of imposing a minimum unit price for alcohol as a way of outlawing cheap alcohol products and reducing alcohol consumption. The logic underlying these initiatives is

that by increasing the price of cheap alcohol products it will be possible to bring about a significant reduction in the quantity of alcohol consumed, particularly on the part of those who are already drinking at a harmful level (Holmes et al. 2014). In this instance, price inflation is being used as a tool for reducing alcohol consumption. In relation to the use of illegal drugs it could equally be said that the inflated price at which these drugs are being sold on the streets (relative to their actual costs of production) results in a reduction in the quantity of the drugs that could be purchased if their pricing were closer to their real costs within a legalized drug market.

Criminalizing Certain Drug Users Increases Their Marginalization and Stigmatization

There can be little doubt that the acquisition of a criminal record as a result of drug dealing or drug use can be a source of stigma and marginalization for the individuals involved. According to Klee and colleagues, stigma can have an adverse impact on drug users, impeding their recovery and reducing their likelihood of securing employment. In their research Klee and colleagues interviewed a range of employers about their willingness to employ recovering drug users. The findings from this research was that employers often had very negative stereotypical views of drug users, perceiving them to be unreliable, untrustworthy, and likely to bring a degree of negative attention to their firms in the event that it became widely known that they were employing current or ex drug users (Klee et al. 2002). Similarly, Lister and colleagues looked at the relationships between police officers and drug users and found that, according to the drug users interviewed, they were often targeted by police officers on the basis of stereotypical views as to the likelihood of their involvement in, or knowledge of, local criminality:

Even if I'd be going for an official appointment somewhere, if I was going to sign on or whatever, and it's [as] soon as they see you, they're collaring you and they're PNC'ing you [checking on the Police National Computer] and they're stopping you in the street by making you spreadeagle on the car while they search you, or throwing you in the back of the van and strip searching you, just trying to belittle you in public. Just to embarrass you in public because people walking by are looking at you getting searched and that. Doesn't look nice, doesn't look nice, it's not nice, it really pisses me off, it's like invading me privacy. (Lister et al. 2008:42)

The targeting of drug users in this way, however, may have more to do with their perception as a high-frequency offending group rather than because of their drug use per se:

So it's not a concentration on drug users per se, it is a concentration on people who are recidivist offenders and who keep getting caught because of course we only know about the ones we've caught as opposed to the ones we haven't caught. (Senior police manager quoted in Lister et al. 2002:37)

While there can be little doubt that attracting the attention of police officers in this way, and the negative attitudes of employers, makes the life of a drug user that much more difficult than it would otherwise be, it is hard to see how these aspects of the life of a drug user could be removed unless drug use itself and drug dependence were to become socially acceptable lifestyle choices. However, in that event there would be a legitimate concern that the very affirmation of the drug-using lifestyle, which might see a marked reduction in the stigma directed toward drug users, could see an increase in the overall levels of drug use in society. There may well be a degree to which the stigma directed toward drug users and drug use is socially functional for the wider society in reducing the likelihood that individuals will choose the drug-using lifestyle. In this sense, while stigma directed at the individual drug user may be experienced as a negative, at a societal level such stigma may function as a barrier against the proliferation of drug use more broadly.

Finally, in connection with the stigma and marginalization that may be associated with the drug-using lifestyle, including the inconvenience of repeatedly being stopped and searched by police officers, it is important to recognize that these negative aspects of the drug-using lifestyle may act in due course as a strong catalyst to the drug user's eventual recovery. In their study of the recovery from dependent drug use, McIntosh and McKeganey found that the negative image of themselves, which they felt was reflected back in the eyes of others, was an important part of the process through which recovering drug users became increasingly aware of their "spoiled identity" and their determination to locate their drug use in their biographical past as opposed to their current sense of self (McIntosh and McKeganey 2002).

Criminalizing Drug Users Makes Delivering Treatment that Much Harder

The proposal that drug use should be dealt with as a health rather than a criminal justice issue implies that there is some fundamental opposition between the two ways of responding drug use – that somehow a choice needs to be made between enforcement or treatment. The reality of drug treatment and drugs enforcement is rather more complex. Table 21.1 is based on data published in 2011 by the European Monitoring Centre for Drugs and Drug Addiction and compares information on the prevalence of problem drug use in nine European centers with what is known about the numbers of people within those countries receiving drug-dependency treatment.

Contrary to what might have been expected, some of the countries with the most liberal drug policies have the lowest proportion of drug users in treatment. In Portugal, where drugs were decriminalized for personal use in 2002 and treatment has been promoted in preference to prosecution, only 14.2% of problematic drug users are in contact with drug treatment services. Similarly, in Italy, which has a policy of dealing with drug possession offenses with administrative rather than criminal justice penalties, only 14.6% of problem drug users are in contact with

Table 21.1 Prevalence of problem drug use and numbers in treatment

<i>Country</i>	<i>Date</i>	<i>Total numbers of problem drug users</i>	<i>Total in treatment</i>	<i>% of problem drug users in treatment</i>
Portugal	2005	30,833	4,388	14.2
Italy	2009	393,490	57,577	14.6
Austria	2011	291,500	4,563	15.4
France	2011	274,000	47,519	17.3
Sweden	2007	29,513	6,231	21.1
UK	2010	383,534	119,652	31.6
Germany	2011	200,402	75,532	37.6
Spain	2010	38,500	26,805	69.6
Norway	2010	12,300	8,817	71.6
Malta	2011	2,159	1,862	86.2

treatment services. Both of these countries have a lower level of contact with drug treatment services than either Sweden, known for its zero-tolerance drug policies, or the United Kingdom, where heroin and cocaine attract the highest criminal justice penalty. On the basis of these data it would appear that there is no simple association between restrictive drug laws and the proportion of problem drug users receiving drug-dependency treatment.

There is evidence, however, that some of the most effective interventions in the area of drug treatment of offenders are ones that have been able to successfully combine elements of treatment and enforcement. The Hawaii Opportunity Probation with Enforcement (HOPE) is a community-based probation program for methamphetamine users/offenders that requires drug users to remain drug-free during the period they are engaged with the program or face a custodial sentence where there are indications that their drug use is persisting. This project involves close monitoring of offenders utilizing regular drug testing and delivering swift, certain, and proportionate sanctions (e.g., a few days in prison) where individuals violate the conditions of their parole:

Under HOPE every positive drug test and every missed probation appointment is met with a sanction. Parsimonious use of punishment enhances the legitimacy of the sanction package and reduces the potential negative impacts of tougher sentences, such as long prison stays. (Hawken and Kleiman 2009:9)

The evaluation of project HOPE by Hawken and Kleiman (2009) identified a marked reduction in positive drug tests on the part of those participating in the program compared to a comparison group. Positive drug tests on HOPE participants reduced from 53% to 4% over a 12-month period compared to a reduction from 22% to 19% on the part of the comparison group. Project HOPE also had a positive reduction in the number of missed appointments, revoked probation orders, and the number of days individuals spent in prison.

Instead of viewing drug use as either a health or a criminal justice issue, there is a strong case for retaining both elements in how we are tackling drug problems and ensuring that those in recovery are assisted in every way possible, including by reducing the availability and accessibility of illegal drugs on the streets.

Criminalizing Drugs and Drug Users Leads to an Increase in Violence

According to Goldstein (1985), the link between drugs and violence can be conceptualized in three distinct ways. Firstly, in terms of the pharmacological effect of the drugs themselves, within which, for example, individuals who are withdrawing may be more likely to react in a violent way to a perceived threat. Secondly, in terms of what Goldstein calls the economic compulsion, through which some drug users resort to a level of violent crime (mugging, robbery) in order to fund their drug use. Thirdly, according to Goldstein, there is a systemic dimension in which those involved in the drugs economy engage in a level of violence as a way of regulating their own and others' drug-related activities; for example, the use of violence to resolve disputes over who has ownership or control of certain drug markets.

There can be little doubt that the fact that certain drugs are illegal results in an increased likelihood that individuals will engage in a level of violence as a way of resolving drug-related disputes. However, accepting this does not mean that the only response to the increased propensity for violence on the part of those engaged in drug use and drugs trafficking would be to remove the contribution of the criminal justice agencies and the criminal law in responding to drug use and drug dealing. Recently, for example, law enforcement agencies have been encouraged to adopt a more harm-reduction perspective within which the goal is not so much to reduce the quantity of drugs being sold on the streets but rather to reduce the level of violence associated with particular drug markets, that is, those that are seen to be generating the highest levels of drug-related violence, with police actively targeting those markets in preference to those markets that are associated with lower levels of violence and lower levels of harm:

Although drug laws reinforced by a level of enforcement appear to have restricted supply and demand of illicit drugs, 'more' enforcement generally does not lead to 'less' supply...and does not necessarily reduce the drug problems, and it can even add to the problems experienced by communities.

However, this is not to say that enforcement has no impact on illicit drug markets. The characteristics of markets change in response to action taken by authorities. If we accept that some drug markets cause more harm than others, this provides a largely untapped opportunity for enforcement agencies to target those that are most harmful and 'guide' or shape even the most resilient drug markets into less 'noxious' forms. (UKDPC 2009:8)

One example of such harm-reduction-oriented enforcement that is described by the UKDPC in their review of harm-oriented policing was the Boston Gun Project's Operation Ceasefire (Braga et al. 2001), in which gun-related drug and gang violence was targeted, with gang members being given a clear message that they had been identified by law enforcement agencies who would not tolerate their continued use of violence; through combining robust enforcement with various forms of community support, including support provided to gang members, the local community witnessed a marked reduction in the level of homicides and in the number of gun-related assaults. The lesson here was that enforcement agencies can play a role in working with communities to tackle the high-harm-related drug markets and reduce the overall level of violence.

The Drug Laws and Drugs Enforcement Do Not Work

A strong case against utilizing the criminal law and criminal justice agencies in responding to drug use and drug users has been made in terms of the limited impact of those agencies in tackling the availability and accessibility of illegal drugs – something that has been made even more difficult through the recent use of the Internet to advertise and distribute the novel psychoactive substances that are now increasingly popular among young people. According to Reuter and Stevens:

Overall, the international evidence suggests that drug laws do not have direct effects on the prevalence of drug use. However, enforcement of drug laws may have effects on other drug-related harms. For example, targeting drug users and dealers for arrest may encourage them to adopt practices that are dangerous for their health. A comparative study in New York and Rotterdam showed that the tougher US approach damaged the possibilities of sharing health information through networks of users and dealers (Grund et al. 1992). A recent US study has shown that those cities with a tougher approach to enforcement do not have lower levels of injecting drug use, but do have higher levels of HIV infection among injectors (Friedman et al. 2006). (Reuter and Stevens 2007: 61)

In assessing the impact of drugs enforcement operations, two aspects have been given particular attention: (1) the evidence as to whether drug enforcement operations have resulted in an increase in the price at which drugs are being sold; and (2) the evidence that enforcement has led to a notable reduction in the availability and accessibility of illegal drugs within local areas. In terms of the first of these two criteria, research has shown an inverse relationship between drugs enforcement and drug pricing, with drugs being cheaper, not more expensive, over the period in which there has been substantial investment in enforcement operations. Caulkins and Reuter, for example, looked at the relationship between drugs enforcement and drugs pricing and concluded that:

Over the last 30 years the most striking observation about drug markets is that the number of persons serving time in prison for drug offenses in the United States has risen steadily and substantially, while the prices of cocaine and heroin, adjusted for purity, have declined. The price decline was sharp during the 1980s and has been gradual since then. (Caulkins and Reuter 2010:7)

A partial explanation for the limited impact of drugs enforcement activities on the price at which illegal drugs are being sold on the street has been provided by research that sought to compare the quantity of seized heroin with the quantity of consumed heroin within Scotland. In this study, researchers were able to draw upon information on the quantity of heroin consumed by drug users within Scotland and the quantity of heroin seized by the police in Scotland to estimate the proportion of seized to consumed heroin over a six-year period from 2000 to 2006. On the basis of this analysis, in only a single year was the quantity of seized heroin greater than 1% of the quantity of consumed heroin (McKeganey et al. 2009). The limited capacity of enforcement activities to push up the price of heroin may be explained in large part as a result of the small relative proportion of seized to consumed heroin.

The extent to which drugs enforcement operations are able to reduce the availability of illegal drugs within local areas was the focus of similar research from McKeganey and McGallagly within the United Kingdom. In this study, the researchers interviewed drug users on the streets within areas that had just previously been the focus of major drug enforcement operations. This study showed that even in the face of major enforcement operations, drug markets were often reconstituted within days or hours of the police pulling back from the local area. From their interviews with local drug users the researchers noted, for example, that:

It is striking in these accounts that the drug users interviewed in our research were of virtually one view; namely that while seizures and other enforcement activities could have an immediate impact on the local drug market that impact would be very short lived. According to our interviewees, the heroin markets were often so well organized that it would be possible to accommodate even relatively large seizures and a large number of local arrests and for the drug market to remain largely intact even if its operations were suspended or diluted for a short period. (McKeganey and McGallagly 2013:11)

In this instance the limited impact of even large-scale enforcement operations to deliver a sustained reduction in the availability of heroin on the streets was an indication of the penetration of the heroin market within the areas studied. However, recognizing the failure on the part of enforcement agencies to foster a sustained reduction in the local availability of heroin and other drugs is not in itself a reason to cease or reduce investment in enforcement efforts. It could equally be argued that the recognition of the inability of enforcement efforts to lead to a reduction in the availability of certain drugs or their price should be used as a spur to critically

reassess and refine enforcement approaches in such a way as to enable such reductions in price and availability to be achieved over time.

Drug Use is a Human Right

Finally, the case against utilizing the criminal law in response to drug use and drug users has been made in terms of the assertion that drug use itself should be seen as an entirely legitimate area of human behavior and should not be in any way characterized as deviant or criminal. Van Rees has argued, for example, that an individual's right to use drugs should be enshrined within the Universal Declaration of Human Rights:

Human rights concern forms of behaviour, which we regard as positive, and enriching for our lives to such a degree that we experience it as a violation of our personal dignity when we are forced to give them up. Drug use belongs in that category. Instead of being included in the category of murder and rape, drugs should be appreciated as a cultural asset similar to religion and art. (Van Rees 1999:89)

More recently Ethan Nadelmann, a long-time campaigner for the legalization of drug use, has forcefully made the case that the state should have no role at all in determining what individuals decide to put into their body by way of their drug use:

But when all is said and done, the principal, and most principled, argument in favour of ending marijuana prohibition is this: whether or not I or anyone else consumes marijuana should be none of the government's business – so long as I'm not behind the wheel of a car or otherwise putting others at risk. It's time to get the government off my property and out of both my pockets and my body when it comes to marijuana. Enough is enough. (Nadelmann 2013)

On the basis of the assertion that drug use should be regarded as a human right, it is difficult to see why governments across the globe should feel any obligation to provide drug treatment services to those who get into difficulty as a result of their drug use. Of course, even if one were to accept the right of the individual to use whatever drugs he or she wishes, this would not necessarily mean that the individual has the right to impose his or her drug use on other people or to adversely affect other people as a result of his or her drug use, as occurs within the circumstances of drug-dependent parents caring for young children whose own lives may be adversely affected in a variety of ways as a result of their daily exposure to their parents' drug use (McKeganey et al. 2002). Equally, even if it were accepted that drug use should be regarded as a human right, this would not mean that drug users should be immune from criminal prosecution where they are committing criminal acts either as a result of, or in some way connected to, their drug use. Criminal justice penalties may need to be retained, then, even in the event that drug use were characterized as a human right.

Conclusion

This chapter has set out some of the arguments in favor of diluting the contribution of the criminal justice system in responding to the use of illegal drugs. While there appears to be increasing momentum in favor of viewing drug use as a health rather than a criminal justice issue, and for health agencies rather than criminal justice agencies to be given responsibility for shaping drugs policies, in fact there is a strong case for retaining the contribution of criminal justice agencies in how we are tackling drug use and drug users. Indeed, rather than seeking to replace a criminal justice response with a health-focused response, progress in tackling drug use is most likely to come through combining the strongest elements of the two approaches along with effective prevention.

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The Culture and Subcultures of Illicit Drug Use and Distribution

Geoffrey Hunt and Karen Joe-Laidler

Introduction

Culture – in both its broad and specific contexts – can be argued to be fundamental to the illicit drug experience. But precisely how culture operates in relation to consumption and distribution has been the subject of much debate and competing theoretical terrains. These theoretical terrains are, ironically, tied to the cultural lens of deviance scholars across continents.

Our aim in this chapter is to examine these terrains of culture in the context of illicit drug use and distribution. In charting this path, we try to highlight the way in which culture started as a central and principal organizing concept in the study of drug consumption but, along the way, was reshaped – reorganized and demarcated – with the lens becoming focused on the subterranean qualities of drug consumption, and more latterly, with culture juxtaposed in an uneasy tension alongside subculture. Our secondary aim is to highlight some of the paradoxes and unintended consequences of focusing on cultures or subcultures of drugs during these shifts.

As we describe in the pages that follow, culture has had a curious and intimate relationship with drugs – in both its licit and illicit histories. Anthropologists were among the first to document the ways in which particular drugs, mainly of a psychoactive nature, were part of the rituals of indigenous belief systems in “other worlds,” or other societies. Historians, on the other hand, have observed the mundaneness, rituals, and beliefs associated with the curative and pleasurable substances of conventional culture, the Victorian period being a case in point (Hunt et al. 2011).

The idea of drug subcultures emerged in the public imagination and in academia in the twentieth century. This close relationship between subculture and drugs would appear to be initially unsurprising given both the association of subcultures

with notions of deviancy and the extent to which the consumption of drugs has been targeted by the authorities as an illegal and deviant behavior. Although the connection would seem obvious, in tracing the history of subcultures and drugs the connections have not necessarily been straightforward. In fact, in mapping this history we discovered that the number of studies of drug use that specifically used the term subculture was less than expected. Nevertheless, although many studies of drug-using practices may not specifically utilize the term, many drug researchers have adopted subcultural theory as a way of explaining drug use within specific groups. Subcultural theory suggests that an individual's involvement with a particular social group, in which favorable attitudes to drug use exist, is the key factor in encouraging drug use (Goode 1989). Researchers have further argued that many different types of drug subcultures exist. For example, in 1980, in an early National Institute on Drug Abuse (NIDA) monograph, Bruce Johnson examined the usefulness of subculture theory in explaining different drug cultures, whether they be marijuana subcultures, heroin-injection subcultures, or multiple-drug subcultures. His views on the salience of subcultural theory continue, as we discuss later, in his and his colleagues' call for a subcultural evolution theory of illicit drug use (Golub, Johnson, and Dunlap 2005). Therefore, in charting this history, it is important to remember that some theorists may or may not explicitly use the term subculture in examining the culture of drug use, but adopt a subcultural approach to explain the development and continuation of drug use within specific groups.

In tracing this connection between drugs and subcultures, a number of other interesting themes have emerged. First, young people have been at the center of the subculture and drugs link. Although some researchers examining older drug users have sought to use subculture to explain the drug-taking practices of, for example, older heroin users, such studies have been more the exception than the rule. This association between subcultures and youth cultures is worth exploring, especially in the light of their drug use. What is it about youth cultures that links it to drug use and to what extent has the use of subcultures been a useful term to explain their drug-using practices?

Second, while the origins of subculture can be located principally within the sociology of deviance, recent theoretical developments, especially in cultural studies, have somewhat rescued the term from its application solely to deviant youth. This rescuing of subcultures has led to a resurgence of interest and a lively debate on the advantages and disadvantages of the concept, and the extent to which contemporary youth cultures could be better described as post-subculture, as the idea of subculture can no longer be clearly differentiated (Redhead 1997; Muggleton 2000; Muggleton and Weinzierl 2003; Hodkinson and Diecke 2007; Bennett and Kahn-Harris 2004; Jenks 2005; Gelder and Thornton 1997). However, this debate has largely been ignored within the drug field in the United States. This lack of interest in the debate about subcultures is even more surprising given the fact that much of the recent subculture debate, especially in the United Kingdom, arose from contemporary research on drug-using cultures among young people attending the rave and club scene. Furthermore, debates on notions of normalization of drug

use in the United Kingdom have also raised questions about whether subculture is relevant to explaining contemporary youthful drug use. Parker and colleagues (1998) argue that young people today view drug use as a normal aspect of their lives and hence drug use can no longer be viewed as a subcultural feature. As the drug attitudes and practices of young people become integrated into the normative, notions of subcultures have become less relevant. Though as we shall see, normalization is not without difficulties in taking into account class, ethnicity, and cross-cultural differences.

Third, the relationship between subculture and drugs should be understood in relation to the larger intellectual developments in the use of subculture over the last century. The Chicago School of Sociology, which, as we note below, was for a time US sociology, was a pioneering force in developing the concept of subculture, which migrated to the United Kingdom. Although initially, there was little interest in the United Kingdom in the US sociology of deviancy, gradually, as interest developed, UK researchers began to examine subcultural theory, and notions of subculture were gradually transformed by the emerging field of cultural studies. With this transformation, subculture as defined by the Centre for Contemporary Cultural Studies (CCCS) was a significantly different concept than its US counterpart, as seen for example in the work of Cloward and Ohlin (1963).

None of this conceptual history is that surprising given the way conceptual ideas migrate from one part of the globe to another. However, what is curious and less easy to explain is that the transformed notion of subculture failed to have much impact in the United States, while at the same time having a significant impact in Europe and Australia. In fact, with a few notable exceptions, recent debates in the United Kingdom and in other countries about the usefulness of subculture have remained largely unacknowledged in the US.¹ This is in marked contrast to the extent to which these debates have been taken up and been added to by youth studies' researchers, especially in Australia and in a number of European countries.² In examining this process of conceptual migration, we began to consider why it was that the dissemination of theoretical ideas only went in one direction. Why is it that recent theoretical developments in studies of youth cultures, subcultures, and drugs have largely been ignored by US researchers? This latter question is one that we will touch upon at the end of the chapter.

The Culture of Drug Use: Primitive and Respectable Societies

As a start, we should define what culture is, at least as it has been understood in the context of the drug scene. Though this in itself is a rather formidable task, Golub, Johnson, and Dunlap's (2005) discussion is useful. Culture is a constellation of the ideas, beliefs, values, morals, customs, and behaviors connecting people as members of a collective. While members influence and shape culture, so too does culture through its norms and rituals provide members with a "toolkit" to experience and be part of the collective (Golub, Johnson, and Dunlap 2005; Street and Thompson 1993; Swidler 1986).

With this understanding of culture, it should not be surprising that anthropologists have had a longstanding interest in the role and rituals of drug consumption in “other worlds.” Drugs, particularly of a psychoactive nature, appeared to have mystical or magical qualities. In these “other worlds,” the mind and mind-altering substances seemed to be intimately connected and integrated into community life, enriching daily life as well as enhancing spirituality. La Barre’s (1938) study is among the first to document the rituals and beliefs associated with peyote use among Native American tribes. Others have similarly looked at the use of psychedelic drugs, long revered for their religious, social, and medicinal qualities (Joe-Laidler et al. 2014; Grob 2002; Dobkin De Rios 1990). Bourguignon’s (1973) meta-analysis of anthropological works on hallucinogens and altered states of consciousness among “other worldly” locales – especially in the Americas and Africa – suggests that:

altered states of consciousness occur in all human societies... frequently embedded into religious patterns of belief and ceremonial, with varying degrees of ritualization... also ritualized in a secular context. Ritualization may be thought of as an imposition of order, a bringing under social and ideological control of what are potentially disruptive psychological states and forces. (1973: 21).

Yet, as Young (2011) reminds us, early anthropologists’ practice of colonial ethnography, while well intentioned in its efforts to document the richness of worlds unknown, created a further demarcation of the “other.” Equipped with a Western toolkit on culture, descriptions and evaluations were often exotically portrayed. This stands in an interesting juxtaposition to the prevailing attitudes and practices evident at different historical periods in the “first-world order.” Historians such as Berridge (2013) aptly point to the cultural acceptability of drugs in the first half of the 1800s, in the United Kingdom, with drugs like opium, alcohol, and tobacco integrated into normal daily life, believed to be beneficial for their medicinal and other well-being qualities.³ It is somewhat ironic, as Berridge (2013) observes, that the Victorian attitudes toward drugs bear some similarity to the idea of the normalization of drug use in contemporary times.

The Development of Subculture and its Incorporation within the Sociology of Deviancy

While many researchers have traced the origins of subculture within the foundations of the Chicago School of Sociology and the sociology of deviancy (see for example the work of Downes and Rock [2007]), others have suggested a much longer heritage. For example, Gelder (2007) has argued that its intellectual origins can be traced back to discussions of the Elizabethan underworld and Tolson (1990) has examined the emergence of subcultural theory in the work of Henry Mayhew (1985), who studied poverty in London. Mayhew examined “subcultures” in which “a complex network of deviant practices [were] utilized by the poor as a means of survival”

(Bennett and Kahn-Harris 2004:3). While not wishing to delve into either a historical discussion of the Elizabethan period or the extent to which subcultures existed in the Victorian city, it is clear that subculture has had not merely a long history but also a long association with notions of deviancy and oppositional culture.

However, a more specific focus on alternative subcultures and subcultural lifestyles was not really formulated until the development of sociology at the University of Chicago, which sought to explain and account for “the extraordinary diversity of human behavior in the American city” (Thornton 1997:3). The Chicago School of Sociology, which for a time, as Thornton has remarked, was American sociology, came to be associated “with a specific kind of urban micro-sociology” (Thornton 1997:11). It focused its attention on Chicago and, as Downes and Rock (2007) observe, “Chicago sociology was to become the sociology of Chicago itself” (2007:49). One of the leading figures within the early development of the department was Robert E. Park, whose essay on the city, published in 1915, outlined “a project to map the social groups of the city in a way which includes their modes of conflict and control, network and segregation, vocation and lifestyle” (Thornton 1997:12). Park’s primary interest was in the city and the extent to which it was both an open space and also one made up of different zones occupied by different immigrant groups. Within the unity of the city, there existed strong elements of segregation. To study this new emerging way of life, Park believed that it could only be studied by direct field observation of different subgroupings within different sub-settings within the city. As Adler (1990) (cited in Page and Singer [2010]) has noted, Park’s methodology involved “seeking out the [target group] member’s perspective ...observing human group life naturalistically...and being in situ” (Adler 1990:96).

Although the specific focus on crime and deviance was not the “express ambition of the Chicago sociologists” (Downes and Rock 2007: 54), nevertheless researchers at the time were interested in social problems. Park saw the city as “a stressful environment that produces a breakdown of social bonds, disorganization, individual isolation, depersonalization, and deviant behavior” (Page and Singer 2010:37). These problems were typically confined to particular neighborhoods and specifically immigrant areas of the city. Park and colleagues (Park, Burgess, and McKenzie 1925) called these areas of Chicago “zones of transition.” Hence, an explanation of social problems within the city, specifically crime and deviance, centered on the peculiar conditions of the zone in transition. In considering this zone, what researchers found significant was the extent to which it possessed a distinctive social organization and culture, which became “a surrogate social order” (Downes and Rock 2007:59).

Consequently, a central feature of these ethnographic accounts, or as Sumner (1994: 43) has called them, “natural histories,” was a description of delinquency and crime characterized not as deviant behaviors but as a natural part of the settlement of newly arrived immigrant groups in these different neighborhoods. Their aim was “to explain the social and cultural context of deviance without reducing young people’s actions to symptoms of psychological inadequacy” (Blackman 2004:106). This focus on deviance was epitomized by Frederick Thrasher’s 1927 study of gangs,

a study which is still viewed today by gang researchers as the foundation of gang studies (see Brotherton 2008). Thrasher, in this pioneering and seminal study, produced a map of gang territories across the whole of Chicago and documented 1,313 individual gangs. Although influenced by the city, he nevertheless saw gangs as separate from it and involved in conflictual relationships with the ways of the wider city. He defined the gang as “an interstitial group originally formed spontaneously and then integrated through conflict” (Thrasher 1927:46). Each gang was different, with “varying degrees of coherence, differing tendencies towards violence and gang traditions” (Gelder 2007:34). The interest in the cultures of deviant groups was further developed by Clifford Shaw, who in 1930 published *The Jack Roller*, which was an autobiographical study of a delinquent named Stanley. Sutherland subsequently took up this theme to look at the problem of the delinquent in the *Professional Thief* (1937). For Sutherland, criminal or deviant behavior was not the result of an individualized or pathological trait but rather a case of “differential association arising out of one’s social connections with other criminal types” (Gelder 2007: 41).

Although Thrasher made no mention of illicit drugs and it is unknown as to whether youth gangs were involved in drug use, it is somewhat prescient that he should have focused on youth gangs, the study of which, by the 1990s, had become firmly established in the minds of both gang researchers and law enforcement officials as youth groups involved with drug-using activities and drug dealing. In fact, many of the studies in the 1990s viewed gang life as synonymous with drug dealing (Howell and Decker 1999). Therefore, although drug abuse could easily be viewed as the result of social disorganization and social pathology within the city, there were few efforts to examine this issue at the time. One significant exception to this was Bingham Dai, who published, in 1937, *Opium Addiction in Chicago*. His aim was to understand drug addicts by examining them “as a group and the world they live in” (1937:645). As a doctoral candidate of Herbert Blumer, his research was firmly based in the Chicago style and clearly his interest was on subcultures. His study was based on fieldwork with respondents and on in-depth life histories. Interestingly enough, in locating respondents, he was assisted by Alfred Lindesmith who, also a student of Blumer, later published the seminal study on *Opiate Addiction* (1947). Dai identified two different types of drug users. First, those who had developed an addiction to morphine as a result of medical treatment, and second, those who had become addicted as a result of their involvement with other drug users. One aspect of the research that was particularly significant, given the extent to which drug-using cultures and ethnicity have been consistently linked in the United States, was his focus on African American men. According to Dai, although African Americans only accounted for 6.9% of the population of Chicago, the percentage of African Americans among those addicted was much higher (17.3%).⁴ Dai’s view on addiction centered on the “maladapted personality,” which was a reflection of the emotional and social inability to cope with social disorganization resulting from rapid social change (Chen 2014). The significance of his treatise was to underscore the extent to which drug use was a way of life, one that was a part of an overall

marginal or subcultural existence. While Dai's work specifically on drugs can be viewed as an exception, this early work was influential and pioneering to the social deviancy approach in studying drug use, which emphasized the extent to which drug users became addicted both to the drugs and to a subcultural way of life (Page and Singer 2010). As becomes increasingly evident, the notion of a subculture and a specific way of life is associated with marginal groups – youth, ethnic minorities, men, and the working class. In other words, subculture was framed around the “other” in the normative first-world order.

By the 1950s and 1960s, subcultural research was emerging, especially with the publication of Albert Cohen's *Delinquent Boys: The Culture of the Gang* (1955), which was influenced by Sutherland's earlier work (1937). In this study, we find the term subculture used “with confidence” (Gelder 2007:41). Like Sutherland, Cohen argues against the notion of delinquency as a pathological behavior and instead argues that it is a social phenomenon in which the meaning of the behavior is located within the subculture itself and its norms and social goals. Delinquent subcultures resulted from “mutual gravitation” of those who also suffered from problems of adjustment because of being young and from disadvantaged neighborhoods. Deviant subcultures were the result of, or an adaptation to, problems of alienation and marginalization. “Such individuals responded to their lack of status ... by forming alternative sets of collective norms, rituals and values which rendered status-worthy the characteristics, abilities and attitudes they shared” (Hodkinson and Diecke 2007:4). Membership of the subculture or the gang entailed similar beliefs, specific ways of acting, imaginative vocabularies, and distinctive styles of dress. Involvement within the gang also necessitated displays of hyper-masculinity and extreme group loyalty, which legitimized aggression.

According to Downes and Rock (2007), the major problem with earlier uses of the concept of subculture was that only “a limited and largely circular use” had been made (2007:125). “What was needed was a theory of the *origins* [authors' emphasis] of such culture” (2007:125). Cohen argued, within a functionalist framework, that structure and culture make contradictory demands and that at these stress points subcultures develop. In other words, subcultures are “problem solutions,” to use Ford's term (cited in Downes 1966: 6). The problem for working-class boys is that while they adhere to working-class culture, they are faced by “the middle class criteria of status,” which is mobility through the educational system. “Because they are excluded by limited opportunity structures from obtaining middle class success, the delinquent subculture evolves as a collective solution” (Brake 1985:49). However, in spite of the subculture being in opposition or in response to the incompatible demands placed on them, the resulting subculture nevertheless retains elements from the dominant or mainstream culture. The gang then became a way of life for young working-class boys in deprived neighborhoods. As a number of researchers noted at the time (see Becker 1964; Matza 1969), the major problem with Cohen's theory was that it discriminated against the working class and “failed to explain middle class deviance because the privileged did not lack status, they possessed it” (Blackman 2004:108).

Cohen's research was soon followed by a number of other studies, the most significant of which, especially for our purposes, was Cloward and Ohlin's *Delinquency and Opportunity: A Theory of Delinquent Gangs* (1963), in which they refined the different types of delinquent subculture and identified three specific types arising in different neighborhoods: criminal gangs, in which "its members are organized primarily for the pursuit of material gain by such illegal means as extortion, fraud or theft" (Cloward and Ohlin, 1963:20); conflict gangs, in which violence is the keynote and "its members pursue status through the manipulation of force" (1963:20); and retreatist gangs, in which the consumption of drugs is emphasized. Members of this latter type "have become alienated from conventional roles... they have withdrawn into a restricted world in which the ultimate value consists in the 'kick'" (1963:20). In describing the characteristics of the drug-using gang, Cloward and Ohlin relied heavily on the work of Harold Finestone, who in 1957 published *Cats, Kicks and Color*. The study, done in the early 1950s and using data from 50 in-depth interviews with African American heroin users in Chicago, examined the role of the drug user, the income-generating activities necessary to maintain the lifestyle, and the behaviors associated with using. His work represents the first in a long line of what Matza (1969) has called the "appreciative" analytic stance, which sought to provide thick descriptions (Geertz 1973) of drug-using cultures, the social settings of drug activities, and the ritual practices associated with drug-using behaviors. His research documented the dress, style, language, attitudes, and music of his respondents and, most importantly, described the significance of heroin. "It was the ultimate 'kick.' No substance was more profoundly tabooed by conventional middle-class society. Regular heroin use provides a sense of maximal social differentiation from the 'square'... No other 'kick' offered such an instantaneous intensification of the immediate moment of experience and set it apart from everyday experience in such a spectacular fashion" (Finestone 1964:285). Within his account, there was little discussion of heroin use as deviant behavior. Instead, "heroin use was put into context as an integral part of a confident, new, rejectionist, culture developed by people whose exploitation...was massive and historic" (Sumner 1994:194). In studies such as this, deviant behavior, although reviled by the mainstream, was no longer assumed to be "necessarily problematic for those who themselves engaged in the behavior. Nor was it any longer assumed that the social mechanisms according to which these behaviors were produced and sustained need reflect a functional breakdown of either the individual or his or her society" (Weinberg 2011:301).

Using Finestone's analysis, Cloward and Ohlin (1963) argued that the drug-using gang member came to be a member because they were "double failures." They had failed in achieving status through legitimate forms of activities but they had also failed to achieve status through unconventional means, either in terms of criminal activities or through the use of force as in violent gangs. "Retreatist behavior emerges among some lower-class adolescents because they have failed to find a place for themselves in criminal or conflict subcultures" (Cloward and Ohlin 1963:183). Having failed to gain status in the other two types of gangs or subcultures, the adolescent ultimately turns to drugs. However, as Becker (1953) notes, the drug user,

in order to obtain a supply of drugs, must affiliate himself with others. The illegal distribution of drugs is limited to “sources which are not available to the ordinary person” (Becker 1953:36). Once associated with other drug users, he becomes socialized into the ways of the subculture or the retreatist gang: “the processes by which people are emancipated from the larger set of controls and become responsive to those of the subculture are important factors in the genesis of deviant behavior” (Becker cited in Cloward and Ohlin 1963: 179). While Cloward and Ohlin’s research was important given its focus on drug use and their attempt to provide a conceptual framework to explain the relationship between drug use and subcultures, they nevertheless failed to understand the possible variance in gang-related drug-using activities. In fact, researchers, including ourselves (Joe-Laidler and Hunt 2012; McKenzie et al. 2005), have noted the extent to which being involved in drug use within the gang does not necessarily mean that the gang member is involved in “retreatist” behaviors. Gang members who use may also be involved in dealing in drugs, which if successful can provide status within the gang. In fact, success in drug-dealing activities could result in high status, depending on the culture of the gang. Moreover, Cloward and Ohlin also failed to distinguish between using and selling different drugs. Whereas gang members may be involved in selling one type of drug, for example, crack cocaine, it did not necessarily follow that they would use the same type of drug. Instead they may opt to consume a different type.⁵

Overall, research on drug use during this period had shifted from “asking why people used drugs to asking how they went about getting involved in drug use and how they remained involved” (Feldman and Aldrich 1990:19). Research in this period also marked an important turning point away from a notion of individual pathology to a more sociologically oriented approach which attempted to view drug use within a sociocultural context. This, as Feldman and Aldrich remarked, was “the first major shift away from psychoanalytic theory and a medical model of addiction to a more sociological perspective” (1990:19).

Subcultures Move to the United Kingdom: From Deviancy to Resistance

According to Brake (1985), in the 1960s many UK deviancy researchers viewed American subcultural theory as unsuitable for examining issues of youthful deviancy in Britain. For example, Downes (1966) argued that subcultural theory of delinquency was inappropriate because delinquency in the UK was “hardly a major social problem, [and] ... gang delinquency on the American model is non-existent” (1966:256). Moreover, according to Sumner (1994), British sociology overall took little notice of the sociology of deviance or subcultural theory from the United States, with the exception of Downes and his seminal study *The Delinquent Solution* (1966). However, by 1968, a group of young sociologists and criminologists including David Downes, Jock Young, Stan Cohen, Laurie Taylor, and Paul Rock formed the National Deviancy Conference (NDC). With its formation, “the concept of deviance

had come home to Europe” (Sumner 1994:262). In considering contemporary research on deviancy in the United States, these researchers were struck by the increasing skepticism that sociologists such as Becker and Matza felt toward the concept of deviancy and the extent to which researchers had increasingly argued that deviancy was “not a quality inherent in any behaviour or person but rests on society’s reaction to certain types of rule breaking” (Cohen 1971:14). Researchers both in the United States and in the United Kingdom began to consider that not only was a study of the rule breaker an essential part of the research on deviancy but so also was an examination of how the rules were made; the sanctioning of people who broke the rules and the reaction of society to deviant behavior. UK researchers also became increasingly concerned with the extent to which the state had extended its social control into areas of “victimless crime.” Drug use was ideally suited to this broader concern (Measham and Shiner 2009).

Although, at the beginning, there appears to have been little difference between the US deviancy theory and the sociology of the NDC, by the time that the early work of Jock Young (1971) and Stan Cohen (1973) appeared, researchers had become increasingly critical of US subcultural theory and researchers “prepared the way for the development of a more indigenous and sophisticated form of British labeling theory which interpreted youth subcultures in terms of social class relations and social change” (Blackman 2004:111). Both Cohen and Young, in examining the situation of deviancy groups or subcultures, portrayed a situation in which the collective forces of the state, and specifically the power of the mass media, were aligned against working-class subcultures. More specifically, media representation of the delinquent subculture had two significant but unintended consequences. First, it intensified the appeal of the subculture to other young people not involved in it, and second, members of the subculture itself began to resemble their portrayal within the media: “The action not only increases the deviant’s chance of acting at all, it also provides him with his lines and his stage directions” (Cohen 2002:137). Using the work of Leslie Wilkins (1964), both of these researchers further developed the notion of deviancy amplification theory. For example, Young argued that deviancy amplification was “when society defines a group of people as deviant it tends to react against them so as to isolate and alienate them from the company of normal people. In this situation of isolation and alienation, the group... tends to develop its own norms and values which society perceives as even more deviant than before” (Young 1971:33 in Cohen 1971). Within this perspective, deviancy was viewed “as a recurrent and structural feature... [in which] all hint of individual pathology was erased” (Sumner 1994:264). Furthermore, both writers emphasized the importance of viewing deviancy as a meaningful act, and the meaning of the act for the deviant was to be an essential component of the research. Their overall aim was to restore “meaning to behavior which had been stripped of it” (Cohen 1971:19). Cohen and Young’s work is also significant because, unlike other research, it began to question the validity and the legitimacy of the medical and professional world in determining what constitutes pathological behavior and deviancy. The “judges of morality were now being judged as having the *strange* views, values and practices”

(Sumner 1994:268). Deviancy theory in the United Kingdom had begun its analysis with a significant attack on the accepted expert knowledge of deviancy and had presented an approach which was deeply skeptical about the validity of society censuring deviancy.

Although Cohen's book *Folk Devils and Moral Panics* had a much more wide-spread impact and effect on deviancy theory in general, for the purposes of this chapter we will focus on Jock Young's *The Drug Takers* (1971). In it, Young set out to challenge the view that drug use was "a disease found at the edges of society among the sick and undersocialized" (Measham and Shiner 2009:504). Young argued that drug use had to be understood within the context of the subculture within which it took place, "[t]he meaning of drug taking has to be sought in the context of the group's values and world view" (Young 1971:124). However, he also argued that it was insufficient to examine drug use only within this context. It was also essential to situate the subculture within the context of the wider society. Subcultures were "a product of or a reaction to social forces existing in the world outside ... There must be fundamental connections between drug-taking and the configuration of values, ways of life and world views prevalent throughout the society" (Young 1971:124). Following the work of Matza and Sykes' (1961) work on subterranean values, he also emphasized the continuity or similarities between deviant and normal behaviors. He argued that deviant values were not in total opposition to or discontinuous with mainstream values but instead "the deviant might only be taking conventional values to extremes" (Cohen 1971:21). These values, such as the search for adventure, excitement, and thrill, cannot be considered as deviant but "must be held in abeyance until the proper moment and circumstances for its expression arrive" (Matza and Sykes quoted in Young 1971:125). In this way, the "delinquent" was no longer viewed as "an alien to the body of society" but instead a disturbing reflection (Young 1971:125). The values adopted by deviant groups are far less deviant than commonly imagined and are in fact closely akin to "normal" middle-class values.

In the case of drug taking, which was the focus of his PhD, Young argued that the societal reaction to the use of drugs was not based on the drugs per se, but instead based on the reasons why drugs were used. Focusing on youth, he identified three types of youth cultures – conformist, delinquent, and bohemian – and within each he examined the role and culture of drug use. Among the former, conflict around drug taking took place not around the consumption of illegal substances but instead over the right to use legal drugs – alcohol or tobacco. In delinquent subcultures, the aim of the group was to create a world of hedonistic pleasures, kicks, and excitement. In this case, the use of illicit drugs was the activity that provided the most pleasure and excitement. Finally, in Bohemian subculture, unlike the delinquent subculture, the formation of the subculture is created not because of its inability to access material rewards, as in the case of working-class subcultures, but instead because its members disdain the rewards of society. "The focal concerns of the culture are short-term hedonism, spontaneity, expressivity, disdain for work" (Young 1971:40). Within this subculture, drug use "is exalted to a paramount position ... and the use of drugs is intimately woven into the fabric of such a culture" (Young 1971:147).

As Sumner remarks (1994), Young's analysis of subcultures and drugs is that drug taking is an individual solution to the problems of modernity and is meaningful within the values of the subculture. This attempt to connect drug use with an analysis of the political economy is what makes Young's analysis of drug use and subcultures distinctive (Measham and Shiner 2009). Drug taking is no longer to be explained as an individual pathology, but instead has to be explained both within the logic of the subculture and within the wider sociocultural context. In fact, as Measham and Shiner note, Young's study was particularly prescient and his analysis today "continues to offer important insights into the location and meaning of such behavior (2009:504).

Although Cohen and Young and other members of the National Deviancy Conference set the stage for the UK transformation of the subculture, it is the CCCS in Birmingham, begun in 1964, that provides the more significant theoretical framework. Unlike their predecessors, researchers at the Centre were less interested in deviancy and crime and more interested in working-class subcultures as enactments of stylistic resistance. "The basic assumption is that youth subcultures belong to the working class, deriving from the experience of subordination. Subcultural activity is interpreted as a form of symbolic politics to particular class and cultural experiences" (Blackman 2005:6). They were interested in youth because it was "one of the most striking and visible manifestations of social change" (Hall and Jefferson 1982:9) in the post-World War II period. "[T]he restlessness, visibility and anti-authority attitudes of youth came to stand in the public consciousness as a metaphor for social change; but even more for all the things wrong with social change" (Hall et al. 1978:48). Although connected with parental class cultures, spectacular working-class youth subcultures, such as Teddy Boys, Mods, and Rockers, became worthy of study. Also, while these subcultures differed from their parents' culture and "must exhibit a distinctive enough shape and structure to make them identifiably different from their 'parent' culture" (Hall and Jefferson 1982: 13), they nevertheless "share some things in common with that parent culture" (1982: 13). Researchers at the CCCS inserted notions of meaning, lifestyles, and modes of expression into subcultures and argued that these were responses to the dominant meaning systems (Brake 1985). Furthermore, notions of social class and political reaction and resistance are now attached to subcultures in two ways. First, subcultures produce resistance territorially by winning or claiming their own space and investing it with subcultural values, and second, they do it in terms of style by using commodities as signs of the dominant culture but in different ways. They argued that young working-class youth operating within subcultures were viewed as being caught "between the traditional working-class culture of their parents and the hegemonic values of capitalism and consumption" (Hodkinson 2007:4). The resulting style-based subcultures were viewed as "spectacular" indicators of the class struggle and were interpreted as distinct forms of youth resistance. Subcultures were regarded as a means of winning space for young people: "cultural space in the neighborhood and institutions, real time for leisure and recreation, actual room on the street corner. They serve to mark out and appropriate territory" (Clarke et al. 1976:45). However, such stylistic and

symbolic forms of rebellion could not ultimately act as an antidote to the marginalization of working-class youth and in fact ultimately they reinforce rather than resolve their material subordination.

Many criticisms have been leveled at the Birmingham school, some of which we will consider in the conclusion. However, one criticism of the Centre has centered on the primacy that the Centre gave to the elaboration of theory over empirical research. In fact, one researcher argued that the reason for this was that “it is cheaper to do theory than ethnography, at least in the field of popular culture” (Evans 1997:185 – cited in Muggleton 2000). Willis’s ethnographic work has been a striking exception to this criticism of the primacy of theory over empirical work. His studies have been described as “a type of fieldwork-based research that not only provides thick descriptions...but also offers theoretical insights” (Sassatelli and Santoro 2009:265). Although much discussion has focused on his *Learning to Labour* (1977), much less emphasis has been given to his study *Profane Culture* (1978) and his analysis of the cultural meaning of drug use. His overall aim in *Profane Culture* was to examine the relationship “between people’s socio-material lives ... and how they symbolically express and understand their lives in terms of taste and style” (Trondman et al. 2011:575). In order to do this, he considers two specific social groups – biker boys or “rockers,” and hippies, also referred to as “heads,” and the ways they use what he calls “clearly distinctive symbolic articulations.” These articulations are sociocultural forms of expression, which are at the same time both a confirmation of the group and a challenge to others.

More specifically, each group adopts a “cultural or symbolic item.” These objects stand in a special relationship to the group and should be regarded “as an agreement, a homology, between the social group’s characteristic sensibility and the cultural item’s meaning or its possibility of meaning” (Trondman et al. 2011: 580). In the case of the motorbike boys it is the motorbike, for the hippies it is drugs in the form of either cannabis or acid. These cultural items stood in “an integral relation” to the culture of the group (Willis 1978). Willis asked, “Why does a social group articulate itself symbolically by establishing relations with some cultural items, but not with others? Is a specific group’s choice of items arbitrary? Does an item receive its significance because it is chosen by a particular group with specific significance, or is the choice related to the item itself? Are there cultural items that have already existing, even essentially given, inherent meanings that entice certain groups to form meaning-making relations?” (Trondman et al. 2011:582). In answer, Willis argues that the cultural item, in this case drugs, was important not because of drugs’ direct physical effect but because “they facilitated passing through a great symbolic barrier erected against ‘straight’ society” (1976:107). They were “keys to experience, rather than experience itself” (1976:107). In using the drugs, the “head” (drug user) could open up “blocked experiential areas” (1976:110) and live in the now. But although the drugs were only keys to the experience, they were nevertheless accorded a certain degree of reverence within the group and surrounded by a good deal of ritual practices. In Willis’s work and in the work of the CCCS, drugs were identified as “a normal practice of subcultural groupings” (Blackman 2004:113). In examining drug

use as normal practice, Willis was able to “describe drugs as an intentional practice which promoted resistance and refusal” (Blackman 2004:113). In so doing, they had removed the analysis of drug use as a social problem and instead had examined its use as a “signifier of subcultural identity” (Blackman 2004:113).

The Shift from Subculture to Normalization

From our review thus far, observers from the 1950s and 1960s believed that drug use in industrialized societies was best characterized as a “subcultural” phenomenon in the United States and later in the United Kingdom. But observers have pointed to the fact that the relevance of the subcultural context of drug use has diminished (Gourley 2004; Redhead 1997). Subcultural theories were developed when drug use was seen as atypical and within the confines of the delinquent working class, and therefore they do not represent the widespread recreational drug scene of today (Parker et al. 1998: 20).

From the 1990s onwards, observers have described the emergence of normalization and recreational drug consumption as distinguishing features of a contemporary youth drug culture with global implications. Over the course of the 1990s, first in the United Kingdom and the United States, a youth scene was emerging – one associated with a distinctive and fluid lifestyle in dress, music, setting, and drug use is flourishing across the world from Europe to the Americas, to Australia, and to Asia (Hunt et al. 2010; Hunt and Evans 2003; Joe-Laidler and Hunt 2008; Joe-Laidler et al. 2006; Malbon, 1999; Thornton, 1996).

This global, yet locally experienced, development has led to much scholarly debate. On the one hand, drug use, especially in the dance scene, had become commonplace in many locales (Hammersley 2005; Parker 2001; Measham, Aldridge, and Parker 2001). In this context, then, the meaning and culture of drug use changed – drug use was not viewed as deviant and instead came to be viewed as non-deviant. Consequently, the notion of subculture becomes problematic when positioned next to normalization. “Normalization theory...further reduces the relevance of subculture theory because it is tied to deviance” (Blackman 2010:352). The shift from drug use being associated with a particular “deviant” culture to part of “mainstream” youth culture and identity has been linked to living in a risk society (Beck 1992; Parker, Aldridge, and Measham 1998). Globalization has transformed everyday life – reshaping families and community, expanding education, restructuring work, and extending leisure and consumption. Leisure, an increasingly important dimension of life in late modernity, becomes a central site for negotiating youth identity and culture, and accounted for the normalization of drug use, with young people seeing recreational drug use as part of consumer, rather than deviant, lifestyle (Hammersley 2005; Miles 2000; Parker, Aldridge, and Measham 1998). Prevalence data, along with other indicators including changes in the availability and accessibility of drugs and the social and cultural accommodation of recreational drug use, have been central to the idea of normalization. While there has been support for the normalization view, Shiner and

Newburn (1997) raised a number of questions around the variance of the contemporary drug scene. Others have also pointed to a differentiated normalization to take into account variations across cultures and drug-types (Shildrick, 2002; Hout 2011). In either case, as Blackman (2010) and Measham et al. (2010) point out, the idea of normalization sits uneasily, and in tension, with prohibition policies. Prohibition and policing of particular drugs associated with leisure may result in the search for alternatives – including legal highs. As Blackman has questioned: Is prohibition's ultimate objective to curb the desire for intoxication (2010:340)?

Crossing the Atlantic, the idea of normalization, at least in the United States, has met with mixed success for at least two reasons. First, the notion of normalization would sit rather uncomfortably next to the dominant public health and criminological demarcation of drug use as a “risk” factor. Anderson and Kavanaugh (2007) have observed differences in the way UK scholars, adopting a cultural studies approach, have looked at raves (with a focus on youth identity, resistance, and deviant subcultures) as compared with their US counterparts' identification of health and crime-related risks.⁶ Political positioning and funding priorities have long been recognized as important factors in the drug agenda. Second, drug cultures and subcultures are shaped by a society's social and geopolitical positioning, and historically through to the present, US drug cultures have been linked to distinct and diverse marginalized groups. Golub, Johnson, and Dunlap (2005), for example, recognize the backdrop of globalization and postmodernity, but argue for a subcultural evolution of drug use approach rooted in the realities of the structural and cultural instabilities of inner-city America. The drug eras and distinct drug generations are indicative of these cultural differences (Golub, Johnson, and Dunlap, 2005). Accordingly, “culture and identity engage in a dialectic of co-production. The prevailing drug subcultures and individuals' social position relative to them define the range of drugs readily available, the symbolic significance of their use, how use can lead to various affiliations and the social consequences for both use or non-use... Culture and identity are constructed from the same source material” (2005: 220). From this discussion, it becomes clear that subculture as a concept has traveled from the United States to the United Kingdom and beyond, but, in its subsequent adaptations and reconfigurations, has yet to return to its origins.

New Directions in Thinking about Culture and Subcultures: Linking Consumption to Supply

As can be seen above, the normalization dialogue has resulted in new challenges for understanding drug (sub)cultures. This includes the challenge of understanding how, in light of drugs being part of the cultural leisure landscape, consumers obtain their drugs. Parker (2000:75) observed that most young British drug users obtained drugs for recreational use through “informal but complex social arrangements” involving friendship and acquaintance networks and avoiding, to the extent possible, direct transactions with “real dealers.” “Sorting” and sharing with friends offered

advantages, particularly fewer risks with the authorities and drug dealers, and decreased financial costs for purchasing. Yet friends still need to obtain the drug on behalf of the group (Ward 2010). As Parker (2000) found, while over three-fourths of the youth in his study were selling drugs to friends, they did not perceive themselves as “real drug dealers” as transactions were informal and on behalf of friends. Moreover, their friends did not perceive them as “real drug dealers.”

As Coomber and Turnbull (2007) and South (2004) observe, this transactional arena is a distinctly social one within the UK drug marketplace, and among recreational users has become relatively normalized. Other countries such as the United States and Australia report similar social arrangements (Schensul et al. 2005; Hamilton 2005). Thus, despite the local culture of drug markets, there are emergent commonalities internationally. Research thus far suggests that “social supply” enhances social interaction among peers, and is embedded in a culture governed by rules, rituals, and norms of reciprocity, sharing, trust, gifting. Exchange through sharing and gifting serve to solidify relationships as well as set boundaries for inclusiveness and distinction (Coomber and Turnbull 2007; Coomber 2010; Hamilton 2005).

Such socially oriented transactions are distinct from conventional drug-dealing arrangements in open street-level sales and closed systems, which typically operate within a hierarchal and controlled structure (May et al. 2000). They are also distinct from the “semi-open” system that has emerged in the nightclub scene where dealers sell to unknown buyers providing the latter “looks the part,” typically in private or semi-public locales (e.g., clubs) (May et al. 2000; May and Hough 2004; Ward 2010). Semi-public systems such as nightclub floor dealing are typically operated through bouncers and doormen (Morris 1998; Hobbs et al. 2003; Sanders 2006; Pearson 2007).

This complex and fluid arena for drug transactions not only challenges conventional notions about public definitions and legal penalties associated with drug selling and trafficking, as young people who are embedded in networks of users and suppliers perceive themselves as distinct from “real drug dealers,” it also raises issues for the usefulness of strict notions of subcultures. Moreover, “sharing” and “gifts” in the context of social relationships are an important aspect of youth cultures and daily life, and present challenges for demand reduction – with its emphasis on abstinence and recovery (Hamilton 2005).

Conclusion: The Missing Subcultures

In this chapter, we have examined the relationship between illicit drugs and cultures and subcultures. In mapping this terrain, we have sought to show the wide-ranging nature of the field, which has encompassed at one end of the continuum anthropological studies of psychoactive drug cultures in non-industrialized societies and contemporary global youth cultures at the other end. While early drug studies focused on the spiritual and mystical culture of those in the “other world,” later attempts to make sense of drug use in the industrializing world similarly suggest a cultural acceptability of particular drugs but couched in health terms. We have also

highlighted the changes in how subcultures are conceptualized in the United States and the United Kingdom, and illustrated the cultural developments and changes that have taken place in deviancy theory, studies of drug use, and theories of youth cultures. As we noted above, the linkage between drugs and youth cultures is one that has remained a primary focus of research. In some respects, youth became the “other” in the developed world, and hence subcultures make for a clear demarcation of the (non) normative. While it may appear that recent theories of normalization have largely undermined the potential usefulness of notions of subcultures, a couple of research arenas still exist that allow for the possibility of the continuing use of subcultural analysis in relation to research on drug use.

Although the work of the CCCS had a major impact on studies of youth cultures, it was not long before criticisms about their research emerged. As many commentators have noted, two criticisms were critically important and remain important today. These criticisms addressed the failure of the Centre to focus sufficiently either on girls or on ethnic minority youth. Since then, much work has been conducted on the culture of girls and on ethnicity, although some commentators would argue that studies of youth and ethnicity are still underdeveloped. However, if we consider research on subcultures and drugs, it is obvious that even less research has been devoted to issues of gender and ethnicity in the world of drugs and culture. In the case of girls, until quite recently, the primary focus on subcultures and drugs has been on young men. Young women were rarely included in studies of subcultures and even less in research on drug-using subcultures. Given the extent to which women and especially young women have been largely ignored in much of drug research, it is probably not so surprising that male groupings and notions of masculinity should be the primary focus. Nevertheless, it is important to emphasize this issue and note the continuing failure of the field to consider the importance of gender in the studies of drugs and culture.⁷

However, there does exist one area of research, which has focused on drugs and culture, and at the same time has examined the importance of both and ethnicity. Surprisingly enough, this area of research, which is often absent in discussions of subcultures, is nevertheless a “traditional” subculture and one that dates back to 1927 and the work of Frederick Thrasher. Since that time, research on youth gangs has grown exponentially and has increasingly focused not only on male ethnic minority youth but also on ethnic minority girls in the gang. Moreover, because gangs are by definition seen as drug-using and drug-dealing youth groups, increased attention has been focused both on ethnicity and on the drug-using practices and cultures of both young men and women. Moreover, recent research has also sought to examine the possible relationship between the culture of drug use, ethnicity, and ethnic identity. Finally, recent work on the cultures of drug selling have also increasingly emphasized the importance of gender, and especially ethnic minority girls, in drug-selling practices. Nevertheless, in spite of this research and its origins, little gang research is classified as studies of subcultures. In fact, in spite of Albert Cohen’s early work, little contemporary research on gangs has focused on examining the usefulness of theories of subcultures. The reasons as to why this should be are complex and unfortunately are beyond the scope of this chapter.

Notes

- 1 Exceptions include Hunt et al. 2010; Anderson and Kavanaugh 2007.
- 2 See, for example, recent discussions in Denmark Kolind et al. 2013; Gudmundsson 2006.
- 3 See also Jay (2010) for historical comparisons.
- 4 See Page and Singer (2010) for a more detailed account of drug users at the time and especially the significance of African American drug users.
- 5 For a further discussion of using and selling in the gang see Waldorf 1993.
- 6 For a more European appraisal of raves and drugs in the United States see Hunt et al. 2010; Hunt and Evans 2008; Hunt, Moloney, and Evans 2009.
- 7 For recent developments in this arena see Hunt et al. 2015.

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Displacement Effects of Supply-Reduction Policies in Latin America

A Tipping Point in Cocaine Trafficking, 2006–2008

Juan Carlos Garzón and John Bailey

Introduction

Two main forces shape illegal drug trafficking: markets and institutions. In a context of prohibition, markets provide the incentives for people and organizations that participate in the illegal drug chain, and institutions influence their behavior by increasing or, in some cases, decreasing the risk of engaging in illegal activities (Garzón 2014). We use this analytical framework to identify recent trends in illegal drug trafficking in Latin America. We focus especially on cocaine in the period 2000–2013.

Our hypothesis is that supply-reduction efforts, especially increased interdiction in the regional and the country-level offensive against the major drug gangs in Colombia and Mexico, created or accelerated ongoing changes in the behavior of criminal organizations. The policies substantially affected the drug trade in the region, with serious negative outcomes for producer and transit countries. We identify 2006–2008 as a tipping point in supply-reduction efforts, as seen in high levels of interdiction, the fragmentation of large criminal organizations, and the start of a decline in coca cultivation and potential production in the Andean region. Our interest is to analyze changes in the cocaine market and the adaptations by criminal organizations after this tipping point, with particular interest in violence and crime in Latin America. To this end, we show how the tipping point magnifies four main effects: the “balloon effect” (the displacement of targeted activity to another location), the “cockroach/diaspora effect” (the displacement of a targeted criminal group to another territory), the “butterfly effect” (the displacement of impacts of state intervention), and the “short-sheet effect” (the displacement of budget priorities).

We build a conceptual framework to analyze the impact of the tipping point in the cocaine chain, testing our categories and variables with the available information. To describe the supply-reduction effort we use cocaine seizures as reported by the Latin American governments in relation to potential cocaine production in the Andean region. We recognize that both types of data have limitations of accuracy and availability, but they provide an approximation of the intensity of interdiction along specific routes. We also use information about trends in cocaine consumption and prices to identify changes in local markets. Additionally, we survey scholarly publications, government documents, and media reports to address our working hypothesis. The analysis is essentially qualitative, using the available quantitative evidence to support our hypothesis.

We emphasize that this is a work in progress that offers preliminary findings relevant to our hypothesis, and we also identify areas that require additional research. With the available information, we find that a supply-reduction strategy can reduce and redirect cocaine trafficking but at the cost of negative outcomes and collateral damage. We argue that the current anti-drug strategy has positive outcomes in specific cases, but it also generates new problems or exacerbates institutional and social vulnerabilities.

The next section addresses the relationship between supply-reduction efforts and their effects on markets and on the dynamics of criminal organizations in Latin America. The penultimate section elaborates the working hypothesis, identifying the main variables and their relationships. The final section discusses the main findings, the remaining questions, and some policy implications.

Four Effects of Supply Reduction on Illegal Drug Trafficking in Latin America

The effects of the supply-reduction strategy on illegal drug trafficking in Latin America can be grouped as four main effects or displacements:

1. the “balloon effect”: pressing down on one trafficking route displaces the targeted activity to another location;
2. the “cockroach/diaspora effect”: repression of criminal networks in one location leads to their displacement to another in search of safe haven;
3. the “butterfly effect”: intervention in a given locale can have an impact in a distant territory, without explicit link or connection; and
4. the “short-sheet effect”: concentration of resources in law enforcement shifts priorities away from other kinds of policies (e.g., prevention or harm reduction). With limited budget resources, the state’s “balance sheet” can cover the nose or the toes, but not both.

We have an extensive literature on the local impacts of the illicit drug trade and the effects of state responses, but here we focus on the transnational impacts, showing the

interrelations between national and regional dynamics. This is relevant, because “success” in one country can bring new problems to its neighbors. In practice, however, it is difficult to isolate the connection between the “external” variables (what happens beyond a country’s borders) and the “internal” (what happens domestically). For example, homicide rates in Central America, one of the main corridors between cocaine production zones and the US market, could be influenced by changes in the dynamics of drug trafficking in Mexico or Colombia, but the available data and methods can’t tell us the precise magnitudes of the effects. Therefore, as we examine the displacements produced by supply-reduction efforts we emphasize that correlation is not causation.

The “balloon effect”

Peter Reuter (2014) notes that the “balloon effect” hypothesis has become part of the conventional wisdom about the illegal drug trade. Different studies use this image to describe the effect of government intervention on displacement of trafficking (Loveman 2006; Friesendorf 2007; Dávalos, Bejarano, and Correa 2009). The theory is that the intensification of interdiction in a specific transshipment country imposes costs on the criminal organization and makes alternative locations more attractive. This hypothesis has been used to explain shifts in production zones in the Andean region (e.g., displacement of production from Colombia to Peru and vice versa), changes of routes (e.g., from the Caribbean to the Pacific), and most recently changes of consumer markets (e.g., displacement of the cocaine market from North America to Europe). The main idea is that pressure by authorities in one place generates effects in others, based on the assumption that criminal organizations have incentives and the capacity to respond to changes in costs and adapt their activities to the new circumstances (Reuter 2014).

Few empirical studies support this hypothesis, in part because of the lack of relevant information and the poor quality of official reports. A problem with the “balloon effect” is that it is easy to confuse correlation with causation, ignoring the multiple variables that could explain changes in markets. As Reuter (2014, 40) states: “Surely the balloon effect contains at least a grain of truth, even if is not the whole story.” Despite the problems involved in trying to support this metaphor with sufficient evidence, it is useful to identify the effect of eradication and interdiction on the displacement of production or trafficking. In the Latin American case it seems clear that an interdiction crackdown by one country has had effects in others.

The “cockroach/diaspora effect”

Bruce Bagley (2012) uses the “cockroach effect” to describe the migration of criminal organizations beyond their territories of origin. For Bagley (2012, 11) this movement “is reminiscent of the scurrying of cockroaches out of a dirty kitchen into other

places to avoid detection after a light has been turned on them.” He identifies the effect as part of the ongoing transformation of criminal groups in Latin America, specifically to describe their displacement from Mexico to Central America. Juan Carlos Garzón (2013) describes this dynamic as a “Criminal Diaspora,” highlighting the impact of state interventions (especially the “kingpin” strategy) and confrontations among rival factions in the displacement of criminal organizations. The effect occurs not only as part of “normal business expansion” but also as a survival mechanism. In that same vein, Daniel Rico (2013) analyzes the Colombian case, showing how criminal organizations there began to orient their expansion toward European markets, while at the same time investing in the creation and growth of domestic markets in South America. In this dynamic, veteran criminals migrated in search of safe haven, while younger criminals, with less experience and a greater propensity for violence, assumed leadership at the local levels in Colombia.

The analysis of the international displacement of criminal organizations as an effect of supply-reduction efforts has been useful not only to describe the regional influence of the major criminal organizations, as from Brazil, Mexico, and Colombia, but also to account for consequences in terms of violence and corruption. In Latin America, public authorities and media have explained increases in crime rates by alluding to the presence of foreign actors. However, the supporting evidence usually is anecdotal and unsystematic. In contrast to the studies that analyze the migration of the Russian or Italian mafia (Gambetta 1993; Varese 2012), in Latin America the cross-national spatial mobility of criminal organizations is relatively new and lacks sufficient research.

The “butterfly effect”

This hypothesis suggests that action “X” in one place can produce a reaction “Y” in another, perhaps distant place. The image underlines the sensitive interdependence of the drug market chain. The difference between the “butterfly” and the “balloon effect” is that the former can combine variables (e.g., drug interdiction in one place can affect homicide rates in another), while the latter explores the displacement of a particular component of the chain from one place to another (e.g., crop eradication in Colombia can be offset by increases of coca production in Peru or Bolivia). Usually the “butterfly effect” serves to show how a small change in one country can contribute to a significant change in another country. For our purposes, the emphasis will be on the unexpected displacement of the impact of an action or intervention from one country to another, no matter the size of the changes.

Castillo, Mejía, and Restrepo (2014) provide an example of the “butterfly effect.” Through a statistical exercise, they estimate the effect that successful cocaine interdiction policies in Colombia had on violence in Mexico in recent years. The authors conclude that aggregate supply shock originating in drug seizures in Colombia affected homicide rates in Mexico. In another example, Angrist and Kugler (2008) link the variation in homicide rates in several regions in Colombia where coca was

cultivated with levels before and after the crackdown on drug-trafficking activities in Peru. The authors find that increases in coca cultivation are related to increases in the levels of violence. Additionally, the United Nations Office on Drugs and Crime (UNODC, 2011) connects the effect of the reduction in cocaine smuggling through Mexico and diversion of drug flows through other Central American countries to the high level of homicides in this sub-region, especially in the Northern Triangle: Guatemala, Honduras, and El Salvador.

The “butterfly effect” alerts us to consider how external factors can play a role in the changes of criminal violence in a particular region or country. In the case of Mexico, for example, the work of Castillo et al. helps us understand that the government crackdowns on drug cartels during President Felipe Calderón’s administration (2006–2012) might not be the only explanation for the surge in violence in that country. The challenge of this perspective is to not overestimate the weight of the exogenous variable, giving proper weight to characteristics of the local context and the proximate causes that influence levels of violence. This is particularly so in a region such as Latin America in which transnational organized crime and illicit drug trafficking figure as prominent explanations.

The “short-sheet effect”

The UNODC identifies what it calls “several unintended consequences” of the prohibitionist model; one of these is “policy displacement.” According to the UNODC (2008, 216): “The expanding criminal black market demands a commensurate law enforcement response, requiring more resources. But resources are finite. Public health, which is the driving concern behind drug control, also needs resources, and may have been forced to take the back seat.” Prevention policies also have been relegated to secondary status in terms of budget and political priorities. The problem is that the state’s balance sheet is finite and there are trade-offs in the allocation of its limited resources.

Since the declaration of a war on drugs in the 1970s, trafficking has had a central place in the cooperation between the United States and Latin America (Andreas and Durán Martínez 2014, 378). Bilateral relationships and resource allocations have been focused on supply-reduction efforts, with the reasoning that supply reduction will drive up drug prices and thus reduce demand. This bias in the definition of priorities and allocation of resources has been reflected in Latin America, where most countries followed the US lead (UNDP 2013; Comolli and Hofmann 2013).

Different works that analyze the cooperation between the United States and Latin America with respect to the distribution of resources and changes in priorities over time support the idea behind the “short-sheet effect.” An invaluable resource to explore this perspective is the website “Just the Facts” <justf.org>, a project of the Center for International Policy, Latin America Working Group, and Washington Office on Latin America (WOLA). Their report (Isaacson et al. 2013) shows how over the past few years the United States has expanded its military intelligence and

law enforcement agencies' direct involvement in counter-narcotics operations. Since 2000, the United States has spent approximately \$12.5 billion in Latin America to stop drugs at the source (Isaacson et al. 2013). In the case of Central America, the Inter-American Development Bank (IDB) and WOLA found that there is a disproportional concentration of resources in projects focused on combating organized crime (43%) and institutional strengthening (36%), especially the police and judicial system (IDB and WOLA 2011). Additionally, a recent report of the Woodrow Wilson Center (2014, 1) concluded: "By focusing too narrowly on counter-narcotics, the United States and host countries became bogged down in a traditional approach to drug law enforcement that prioritizes arrests over community based approaches to reducing crime and violence."

Apart from a regional perspective, a number of studies emphasize a specific type of US cooperation with a particular country. This is the case of Plan Colombia, which involved \$6.6 billion in US assistance between 2002 and 2013 (UNDP 2013; Tickner 2014), and the Merida Initiative, specifically, security cooperation with Mexico (Seelke and Finklea 2014). The impacts of these packages have been controversial, especially because of the "collateral damage" produced in terms of violence, human rights violations, forced displacements, and the like (Rosen 2014; Isaacson 2010). Despite recent reallocations of resources to programs such as prevention of youth violence and the strengthening of justice sector institutions, among others, the central point is that 88% of total US security assistance to Latin America continues to be centered on traditional threats (UNDP 2013).

Each of the four effects discussed has different impacts according to the specific country context. The extent of the negative consequences varies according to the role of each country in the drug trade chain and is strongly correlated with weak institutions, especially weak rule of law and lack of resources. Our purpose is to provide a general idea of recent changes in these effects, analyzing how the tipping point of supply-reduction efforts can generate specific impacts in drug markets and consequences for citizen security in Latin America. Our hypothesis is that during 2006–2008 a confluence of events in Mexico, Colombia, and the United States generated a tipping point in the cocaine chain that influenced new patterns of markets and criminality.

A Tipping Point in Cocaine Supply Reduction: Effects in Latin America

Three sets of policy changes introduced in 2006–2008 constitute a tipping point in Latin America toward new patterns of drug markets and criminality: first, Colombia shifted tactics in drug interdiction and reoriented the offensive to disrupt the large criminal organizations, as seen in demobilization of paramilitary groups and emergence of criminal gangs; second, Mexico intensified its offensive against trafficking; and third, the United States hardened its Southwest border with Mexico.

The first element of the tipping point is the offensive by the Colombian state against cocaine production and trafficking, leading to a reconfiguration of criminal organizations in this country. The offensive is reflected in increased seizures, the decrease in potential production (shown in Figure 23.1), and the fragmentation of criminal groups.

According to Castillo, Mejía, and Restrepo (2014), in 2006 the Colombian government reoriented its anti-drug strategy to de-emphasize attacks on the cultivation phases of the drug production chain (coca crop eradication) and focus more attention on the interdiction of drug shipments and the detection and destruction of cocaine processing labs. A result of this shift was an important reduction in the supply of Colombian cocaine. At the same time, according to Daniel Rico (2013), the criminal structures that once operated in Colombia, then known as “cartels,” were weakened by government offensives and by internal disputes. The demobilization of paramilitary groups, with more than 30,000 members, had an important influence on the illegal drug chain. Criminal organizations entered a phase of adaptation characterized by the fragmentation of the large structures and the emergence of multiple groups, labeled by the authorities as “Emerging Criminal Gangs.” In this context, Rico (2013) suggests that the Colombian groups lost considerable influence in the US market, while Mexican organizations gained strength as distributors of cocaine and thus more leverage to negotiate better terms from Colombian producers.

These arguments indicate that during 2006–2008 in Colombia the cocaine chain experienced a double shock: a supply shock, identified by Castillo et al., and an

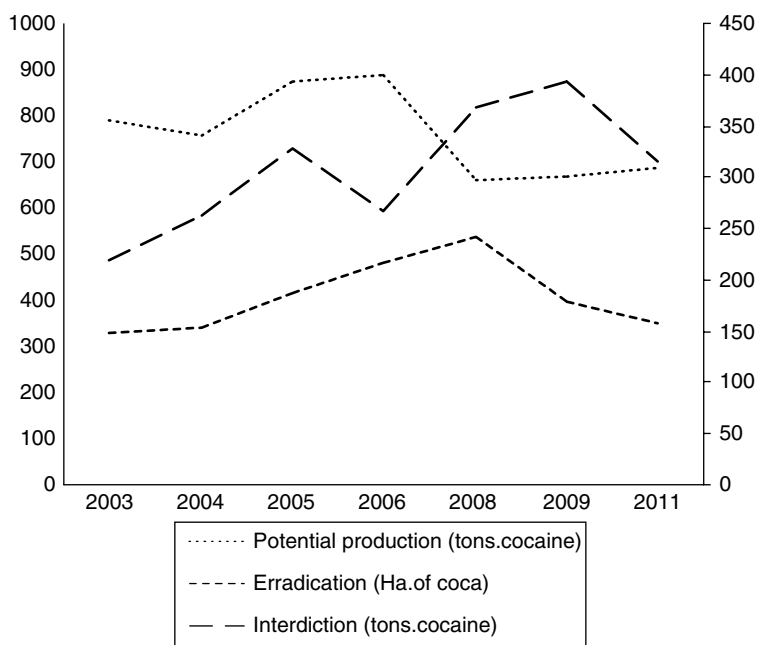


Figure 23.1 Potential production, interdiction, and eradication: Colombia 2003–2011. Source: UNODC Statistics

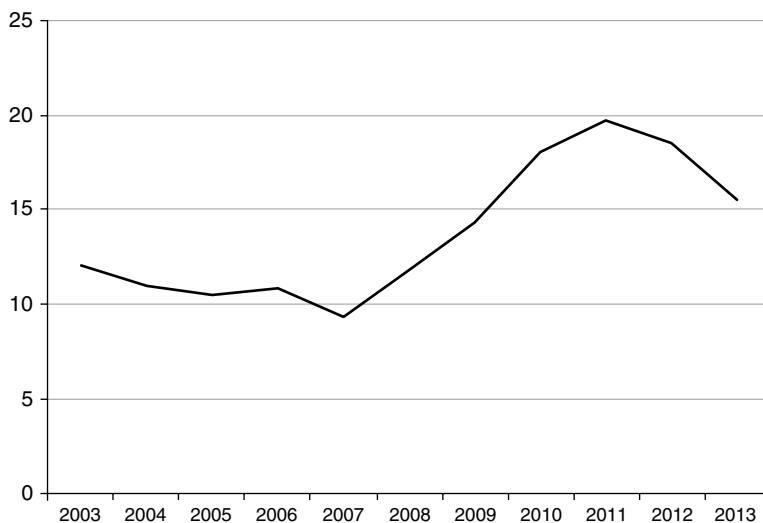


Figure 23.2 Homicide rate in Mexico (per 100,000 inhabitants) 2003–2013. Source: Executive Secretariat of the National Public Security System

intermediaries shock (the reconfiguration of drug-trafficking structures), identified by Rico. Both shocks had relevant impacts on the levels of cocaine production in Colombia and the quantities of product exported.

The second element of the tipping point is the “war” on drug-trafficking organizations launched by Mexico’s President Felipe Calderón in December 2006. The offensive contributed to raising levels of violence (as shown in Figure 23.2) and to complicating cocaine trafficking through Mexico and into the United States.

Within days of taking office in December 2006, President Felipe Calderón dispatched some 25,000 federal police and military personnel to several cities along the US–Mexico border in joint operations against criminal organizations. Dozens of other such joint operations were sent subsequently to trouble spots along the border with the United States and to interior coastal states. The joint operations were but one of a series of policy measures in a broad strategy against organized crime. Overall, the Calderón government took a quantum leap to strengthen the country’s police–justice systems, with an emphasis on combating organized crime. As to resources, for example, the federal budget in real terms directed to public security increased by 59% over the six-year term. The federal police grew from 6,489 officers in 2006 to 36,940 in 2012, and substantial investments were directed to strengthen state and local police. A point of particular emphasis was intelligence: the “Mexico Platform” was an ambitious attempt to construct a nationwide set of databases on relevant information such as vehicle license plates, active and retired police officers, weapons, and the like (Presidencia 2012; Bailey 2014, ch. 6).

As to results of the anti-crime effort, the government touted especially its king-pin strategy. Of the 37 most-wanted criminals identified by the government in

March 2009, 22 had been killed or captured by July 2011. The government could also point to the 112,889 persons detained on drug-related charges (Presidencia 2012). Public opinion, however, was traumatized by the violence that erupted in 2007. The national homicide rate more than doubled in two years, and – though estimates vary – some 60,000 deaths were attributed to organized crime by the end of Calderón's term in 2012. Many blamed the government's strategy of direct confrontation for the spike in violence. The kingpin emphasis led to the decapitation of large organizations, which promoted fragmentation and increased the competition and violence among second-level leaders (Hamilton 2013).

The intensification of enforcement and the resulting violence increased the costs of drug trafficking in Mexico. The question is whether the change displaced some trafficking activities to countries lying between Colombia and Mexico. According to Peter Reuter (2014), however, the problem with this suggestion is that there are almost no direct deliveries to the United States from Central America. Also, cocaine seizures in Mexico were relatively low, taking into account its role as the main transportation route to the United States. The high of 48 tons for 2007 was largely the result of two record-setting seizures in Mexican ports: 11.7 tons in September and 23.5 tons in October (Hope 2014). Also in 2007 in Colombia the total amount of cocaine seizures was 195 tons. Taking this figure into account, the shock in Mexico must be understood as a change in the conditions of drug trafficking rather than a displacement of drug routes away from this country.

The third element of the tipping point is the intensification of US control of its southern border and increased cooperation with Mexico. The United States hardened its 2,000-mile land border with Mexico as well as its sea border on the Gulf of Mexico and the Caribbean, initially as a response to the 9/11 terrorist attacks and subsequently in response to the potential for spillover violence by criminal organizations operating in northern Mexico. Beginning in 2006, the United States formulated a southwest border strategy that improved interagency coordination and overall effectiveness. Mexico and the United States subsequently launched the Merida Initiative in October 2007, which accelerated bilateral cooperation against criminal organizations. The Initiative was later expanded to include Central America and the Caribbean.

The United States introduced two sets of policies in 2006–2007, which complemented those taken by Mexico. A budget reauthorization in 2006 for the Office of National Drug Control Policy (ONDCP) called for a strategic approach to drug interdiction on the Southwest border, and the first such strategy report appeared in 2007 (Figure 23.3). The main goal was to improve coordination among the scores of local, state, tribal, and federal-level anti-drug agencies along the border as well as with their counterparts in Mexico. For example, administrative mechanisms such as Border Enforcement Security Task Forces were created to improve coordination on the US side and Sensitive Investigative Units were set up to better work with Mexican agencies (ONDCP, 2013a). The second policy innovation was the Merida Initiative adopted by the Calderón and George W. Bush administrations in October 2007 and reaffirmed by the Barack Obama government in March 2010. The Initiative included a substantial increase in US spending to assist Mexico's struggle against trafficking

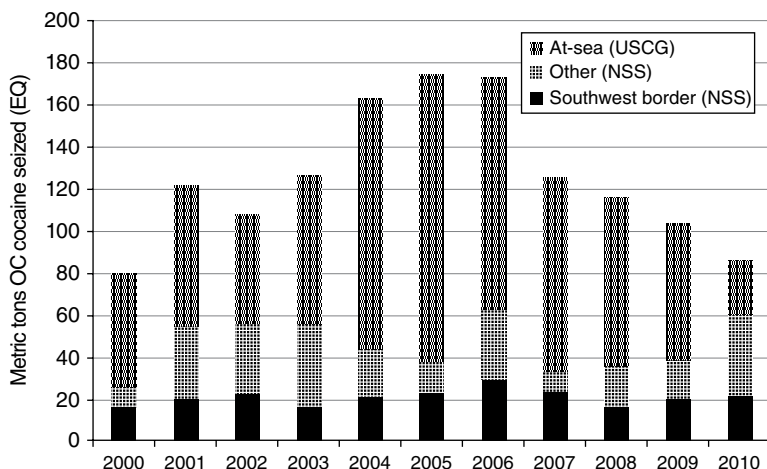


Figure 23.3 Cocaine seizures at the southwest border, the rest of the United States, and at sea, 2000–2010. Source: Office of National Drug Control Policy (2014). “What America’s Users Spend on Illegal Drugs: 2000–2010.” Original sources: National Seizure System (NSS), EPIC, extracted March 15, 2013, and US Coast Guard

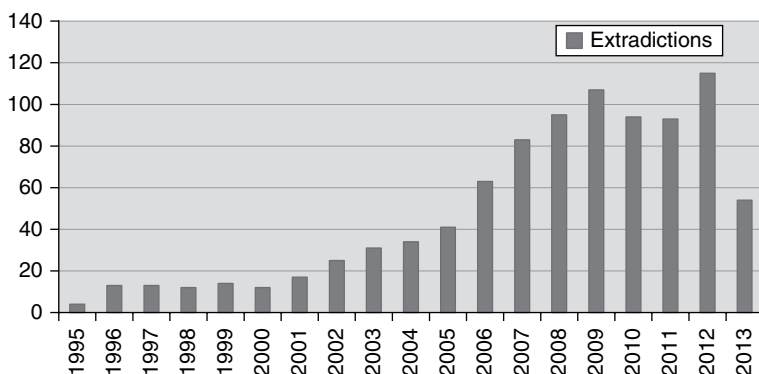


Figure 23.4 Individuals extradited from Mexico to the United States 1995–2013. Source: Seelke and Finklea (2014), “U.S.–Mexican Security Cooperation: The Merida Initiative and Beyond.”

organizations (\$1.4 billion over three years), but its importance rested on much closer collaboration between the governments with respect to sharing intelligence and the recognition that the anti-drug effort was a shared responsibility, with the United States pledging greater effort to reduce drug consumption, weapons trafficking, and money laundering (Seelke et al. 2011; Seelke and Finklea 2014).

It is difficult to determine the precise impact of bilateral cooperation on drug trafficking. The US State Department has cited the arrest or killing of high-profile criminal leaders since late 2009 as examples of increased law enforcement cooperation. Additionally, the number of extraditions increased during Calderón’s administration, starting at 83 in 2007 and rising to nearly 100 per year (Figure 23.4).

The operations against “priority targets” have shown the important role that US law enforcement agencies played in Mexico (e.g., the capture of the Joaquín “El Chapo” Guzmán in February 2014) (Radden Keefe 2014). Overall, we consider that stepped-up bilateral cooperation must be taken into account as a force of change, without overestimating the role that the Merida Initiative may have played in this dynamic.

In addition to these three sets of policy changes, we note that the quantities of cocaine seized in South and Central America increased steadily over 2003–2009, reaching the highest point in 2009 with 482 tons. This is significant if we consider that, according to the White House, the potential cocaine production in the Andean region was 750 tons in 2010. Production figures should be read with caution because of potential double counting (e.g., a seizure in a border region could be counted in both countries), and the inconsistencies in information systems across the region. Even so, the evidence shows an impressive effort to interdict the supply of cocaine to the United States.

According to the UNOCD database, between 2003 and 2011 in South America 2,152 tons of cocaine were seized and more than one million hectares of coca crop were eradicated. In many countries the number of people jailed for drug offenses showed remarkable growth (OAS 2013). At the same time, the street price of cocaine in the United States rose from \$150 to \$177 and the amount of cocaine consumed in this country decreased by about 50% (ONDCP 2014). Does the supply-reduction strategy explain the decrease of the availability and price increase of cocaine in the United States? With the available information it’s difficult to claim causation between anti-drug interventions and the changes in the cocaine market. There are many factors that influence supply, prices, and levels of consumption (Mejía and Posada 2008; Babor et al. 2010; Pollack and Reuter 2014).

Even accepting that in the US case the supply-reduction efforts in Latin America had the expected effect, from the regional perspective the question is: what is the cost–benefit balance of the implementation of this policy? To address this question, we analyze how the 2006–2008 tipping point magnified the four effects and changed the cocaine market and the dynamic of organized crime in Latin America. Figure 23.5 synthesizes the framework proposed in this chapter.

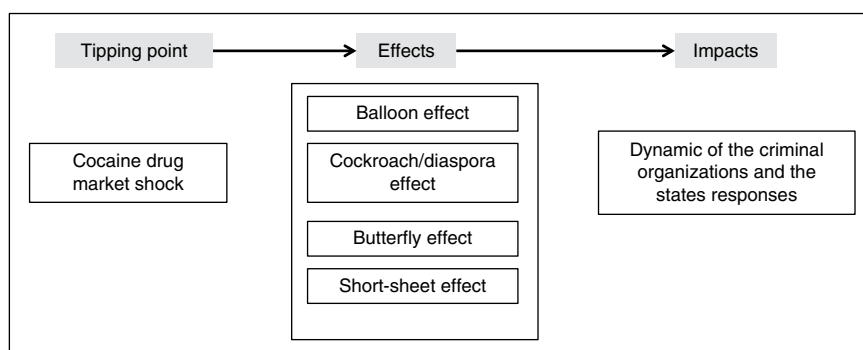


Figure 23.5 The shock, the effects and their impacts – analytical framework

In the next section we discuss the main changes and trends in illegal drug trafficking based on the idea of the shock and its repercussions in the four effects. Rather than seeking to offer an in-depth analysis of each variable, the idea is identify the stylized facts of the cocaine market and the consequences of the supply-reduction strategy.

Supply Reduction and Dynamics of Cocaine Trafficking in Latin America: Costs and Consequences

A challenge to measure the impact of the supply-reduction strategy is the multiple variables at play, making it difficult to identify the specific causes for fluctuations in prices, purity, and the availability of cocaine. We can, however, analyze the main changes during and after the tipping point. Obviously, the correlation between the shock and the effects need not imply causation. Our assumption is that the shock has consequences and impacts depend on the characteristics of each country and its role in the drug chain. This is a preliminary approach that must be tested with available evidence.

In this section we identify variations in the four effects, taking the 2006–2008 shock as the starting point. Our aim is to show the potential and real costs of the supply-reduction strategy. The main findings are summarized in Table 23.1. This exercise is based on a review of the secondary literature on the effects of drug trafficking and crime in the region, as well as multilateral and national government reports.

It was not possible in all cases to support the identified changes with empirical evidence. At times, the shifts or trends highlighted in reports, official documents, or academic articles are assumptions based on anecdotal information or thin evidence. We do not attempt to evaluate the quality of the studies but recognize knowledge and information gaps. Aware of the limitations, we categorize the evidence as “strong” (supported by data and studies, applied in an important group of cases), “moderate” (with some data and systematic analysis, but only applied in some cases), and “tentative” (based on anecdotes and limited evidence).

Regarding the “balloon effect” there are three main changes to highlight: the shift of the distribution of global cocaine consumption, with a more important role for the European market and the West African route; the growth of local retail markets in transit countries; and the displacement of production within the Andean region.

In 2005, 49% of cocaine users (annual prevalence) were in North America, 25% in Latin America and the Caribbean, and 15% in Western and Central Europe. In 2011, Western and Central Europe increased its participation to 21% and Africa doubled its share of users, with 15% of the global consumption of cocaine (UNODC 2013b). While the US rate of cocaine consumption dropped considerably, the market increased elsewhere. In Africa and Asia there are pockets of emerging cocaine use; in Western and Central Europe, indicators of overall supply suggest a rebound in the availability of cocaine; and the retail market in several countries in Latin America has grown (UNODC 2014a). The correlation between amounts of cocaine seized in

Table 23.1 Impacts of the supply-reduction strategy: Effects, changes and costs

<i>Effect</i>	<i>Change</i>	<i>Evidence</i>	<i>Potential and real cost</i>
(A) Balloon effect	Displacement of routes (and final consumption market)	Strong	- Increased consumption in producing and transit countries
	Displacement of production	Strong	- Violence related to disputes over emerging routes
	Displacement of consumption	Moderate	- Growth of local retail markets
(B) Cockroach/diaspora effect	Displacement of criminal organizations	Moderate	- Expansion of criminal activities and corruption
	Spillovers of violence	Tentative	- Diversification of criminal activities (e.g., predatory crimes)
	Expansion of transnational organized to “new” zones	Tentative	- Diffusion of violence and crime to new territories
	Fragmentation as a result of the government enforcement and inter-gang disputes	Strong	- Institutional instability
(C) Butterfly Effect	Scarcity of drugs in transit countries as result of government intervention in producer countries	Tentative	- Diffusion of violence and crime to new territories - Institutional instability - Interdiction crackdowns by one country may affect others
	Increases of violence in other countries as a result of government interventions in producer and transit countries	Moderate	
(D) Short-sheet effect	Relocation of resources from one region to another	Strong	-Supply-reduction policy bias: International cooperation oriented to reducing drug supply, instead of addressing the needs of the recipient country
	Changes of preferences and relocation into new areas	Moderate	- Loss of independence and autonomy to allocate national resources

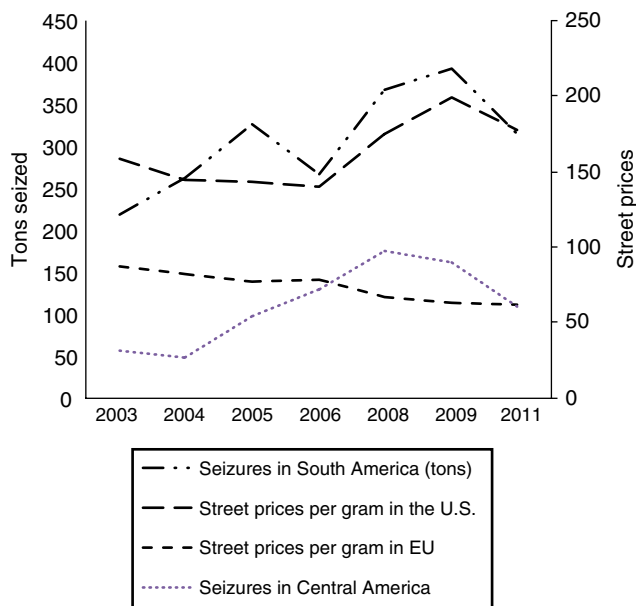


Figure 23.6 Cocaine seizures and the street prices in the United States and the European Union. Source: UNODC Statistics

South and Central America and increased street prices in the United States is high (Figure 23.6). On the other hand, in Europe (considering the European Union) there is an inverse relationship (more seizures in Latin America correlate with cheaper cocaine in EU). In Latin America we have inadequate information about prices, but the evidence shows that cocaine use is widespread across the region. In some countries it has reached levels similar to those found in Europe. The number of past-year cocaine users in South America was estimated at almost 2 million in 2004–2005 and at 3.35 million in 2012 (UNODC 2014a).

Colombia’s “emerging criminal bands” turned to European markets and focused on developing local markets in South America for cocaine and its byproducts. Central America, previously a transit zone, assumed a more active role for drug-processing and money-laundering services (Garzón 2013). West African countries are playing a much larger role in international drug markets (West Africa Commission on Drugs 2014). According to the UNODC (2013a), a significant percentage of cocaine exported to Africa passes through Brazil, transported by Nigerian criminal groups. Recent information shows that flows of cocaine from Venezuela to Africa have decreased, replaced by transshipment through Brazil and Argentina.

On the other hand, the volume of cocaine production has changed slowly in the Andean region. The remarkable drop in Colombia’s production, especially in 2008, was partially offset by increases in Peru and Bolivia (Figure 23.7). In Peru, coca bush cultivation increased by 34% between 2005 and 2011, exceeding the production

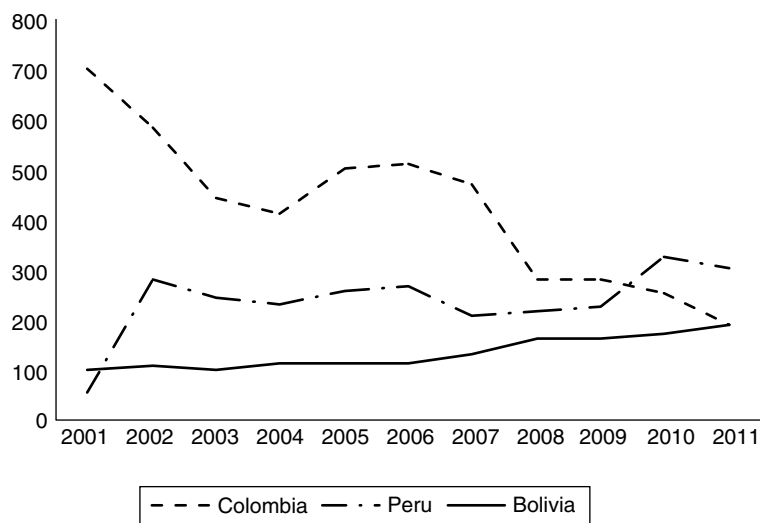


Figure 23.7 Potential pure cocaine production (tons) 2001–2011. Source: UNODC Statistics

potential of Colombia (UNODC 2013a). In 2007, the potential production of the Andean region was 810 tons of cocaine; in 2008 this figure decreased to 660 tons and rebounded to 680 tons in 2011 (ONDCP 2013b). The deficit generated by the shock in 2007 was a little more than 100 tons, an important decrease but not enough to leave the market undersupplied.

Criminal organizations adapted to changes of route and the emergence of “new” markets. A temporary deficit of cocaine supply could explain in part the movement of Mexican organizations to the Andean region and to some transit countries. During this process, Colombian groups lost influence in the US market, while Mexican gangs gained some control over trafficking to the Northern Hemisphere (Rico 2013; Dudley 2014). Colombians sought to strengthen their presence in key transit areas (Venezuela and Honduras) and some alternative routes (e.g., Costa Rica), while Mexicans sought to engage production areas. The trends reflect in part the “cockroach/diaspora effect,” but not all movement by criminal organizations could be explained by a rational decision to shift business to a distant territory (Garzón 2014).

What happens in Latin America is similar to what Federico Varese (2012, 15) found in the case of the Russian Mafia in Italy: “A Mafioso is in new territory because he escapes to it. Once there, he explores local opportunities.” In most cases this is not an orderly process of expansion, but rather a survival mechanism. Government offensives against the bigger organizations in Mexico and Colombia generated a pressure on the first and second tiers of their leadership (Garzón 2014).

A principal strategy in the supply-reduction effort has been the “kingpin” approach that seeks to dismantle drug syndicates by killing or capturing their leaders. The assumption is that eliminating cartel leaders disrupts criminal organizations and

weakens the drug-trafficking business cycle. In Mexico's "war on drugs" President Calderón's administration boasted of capturing or killing 37 major drug traffickers, with 25 of these between 2009 and 2012. A consequence of this strategy has been the fragmentation of the groups, with the attorney general's office estimating that seven major criminal organizations have now become "between 60 and 80" (Corcoran 2014). In Colombia we find a similar kind of process.

Given this reality, some of the established criminals sought safer locales in which to continue their activities, generating the "diaspora effect." With some exceptions, this dynamic involves specific leaders or small groups that have sought partnerships with local organizations that could provide protection, contacts, and access to markets or routes. Even though the presence of foreign criminals has been used to explain increases of violence and crime in some Latin American countries, we should be wary of this interpretation. The alliances between transnational drug-trafficking organizations and local groups are just one of the reasons for violence in contexts characterized by weak institutions and fragile rule of law (Shirk 2011; Locke 2012).

On the other hand, there is not enough evidence to support the idea of a "spillover" of violence on the US–Mexico border. Kristin Finklea of the Congressional Research Service finds there is currently no comprehensive, publicly available data to answer the question of whether there has been a significant spillover of drug-trafficking-related violence. We do not know "what proportion of the violent crime rate is related to drug trafficking or, even more specifically, what proportion of drug trafficking-related violent crimes can be attributed to spillover violence" (Finklea 2013, Summary). Most of the information that supports the "spillover" effect is based on particular events or anecdotal reports that could overestimate the influence of the exogenous variables in a given territory.

We find interesting the variation of effects that drug trafficking has in different countries, especially the relationship between the changes in flows of cocaine and variations in levels of violence. For example, in Honduras, the number of cocaine seizures, used as a proxy estimate of the cocaine flow, is highly correlated with the homicide rate. In contrast, in countries such as Panama and Costa Rica this correlation is unstable, and in Guatemala and El Salvador there is no relationship (Figure 23.8). Given this mixed picture, there appears to be no single or unambiguous correlation between organized crime and violence. In some circumstances, criminals and criminal economies can operate with moderate and selective use of violence. There are many factors that influence this relationship, including the capacity of the state to manage negative effects produced by illegal economies (Caulkins and Reuter 2009).

This is one of the main challenges to demonstrate the "butterfly effect." One of the assumptions is that the increase of violence in some countries is related to changes in drug markets due to government intervention in other countries. For example, in the recent literature the offensive against drug trafficking in Mexico and Colombia is used to explain the spiral of violence in countries like El Salvador, Guatemala, and Honduras (Andreas and Durán Martínez 2014; International Crisis Group 2014). The hypothesis is that Central America has become an area of much greater drug-smuggling

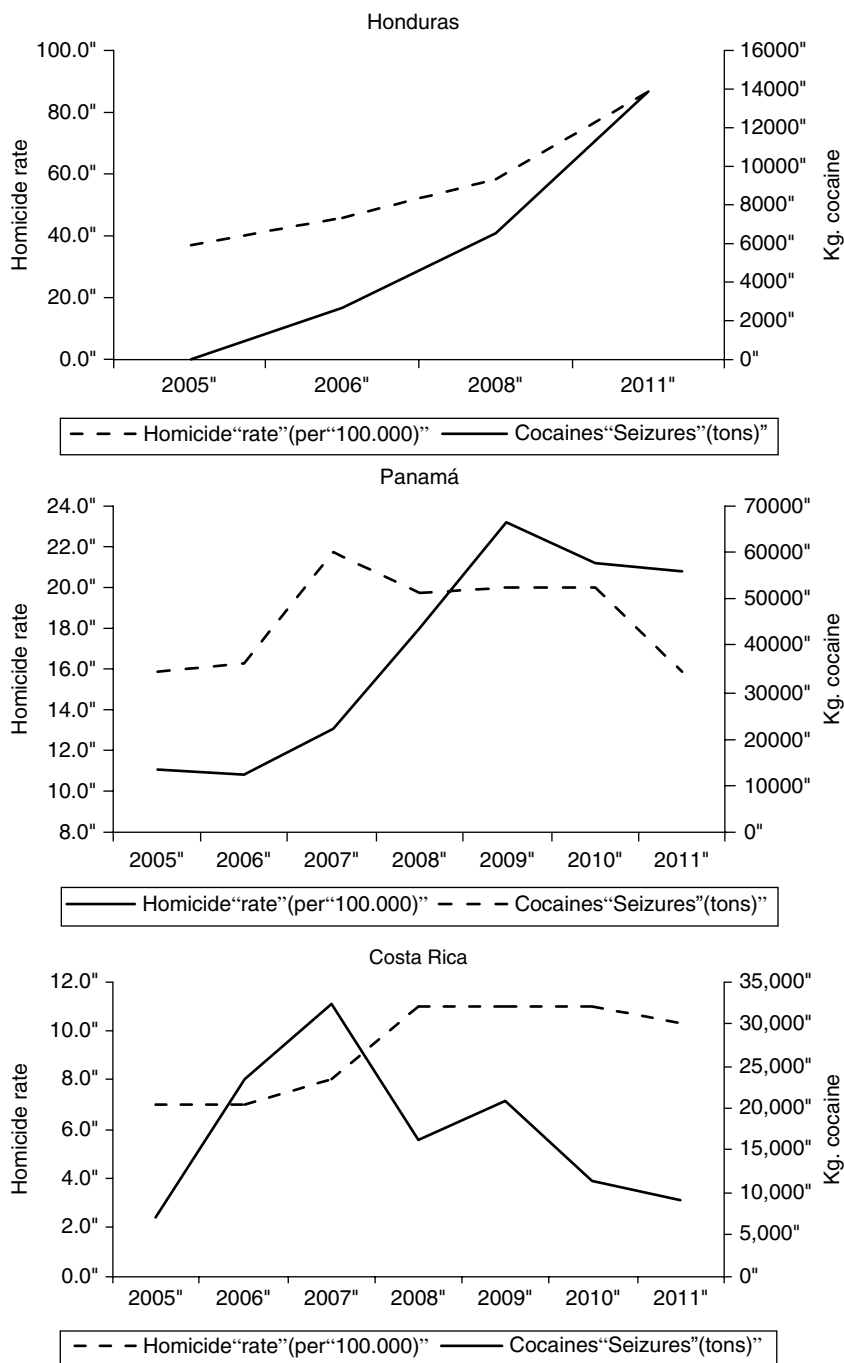


Figure 23.8 Homicides rates and seizures in Honduras, Panamá and Costa Rica. Source: UNDP (2013), "Regional Human Development Report 2013–2014. Citizen Security with a Human Face: Evidence and Proposals for Latin America."

activity and that the local gangs operating in this region were actively involved in trafficking (Farah 2011; Dudley 2011). The problem with this approach is that it tends to ignore other dynamics that influence violence and can exaggerate the role of local organizations in transnational trafficking (UNODC 2012).

In the case of Guatemala, for example, the homicide rate decreased after 2006, despite the increased role of this country as a route to the US market. In El Salvador levels of violence dropped dramatically with a truce among gangs. Both examples suggest that violence among criminal groups is not necessarily linked to drug trafficking. Further, Nicaragua and Costa Rica, two important transit countries, have relatively low levels of violence and crime, comparable with European levels.

According to the United Nations, organized crime – including drug trafficking – is not the major cause of violence in Latin America. The UNODC (2013b) estimates that 33% of homicides were committed by organized crime. From this perspective, there is no simple explanation for the high levels of violence and crime in the region. While the negative consequences of the drug trade and the “war on drugs” explain some of the criminal violence, an assessment of the impact must consider the fragility of institutions, the role of national elites, and pronounced socioeconomic disparities, among other factors.

With regard to the “short-sheet effect,” after the shock of 2006–2008, resources were displaced from Mexico and Colombia to Central America, and Plan Colombia and the Merida Initiative had important changes in the definition of priorities and budget distributions. The reallocation of resources could be explained as a response to the changing nature of the assistance to Mexico and Colombia (more focus on capacity strengthening and less on the provision of military equipment), as well as to the rising importance of Central America in the anti-drug strategy. According to the “Just the Facts” project, in 2008–2010 (after the tipping point) US aid to Latin America and the Caribbean hit its highest level, explained in part by the Merida Initiative (Isaacson et al. 2013). In 2011, there was an important drop in military and police assistance, in a context of US budgetary austerity and decreased assistance to Colombia and Mexico. At about the same time, the amount of resources from the United States to Central America grew (Isaac et al. 2013).

The displacement of resources shows the continuing weight of drug-supply reduction in US assistance to Latin America. If the supply problem migrates, the policy remedy moves as well. The flaw in the remedy persists: the assistance aims to reduce drug flows to consumer countries; it is not aimed to address the needs of the developing countries (Comolli and Hofmann 2013). In the case of Colombia, Mejía and Restrepo (2014, 31) find that the countries engaged in cooperation “reduce the space and independence to decide which policies are more effective and less costly for their own national interest rather than the interest of funding countries.”

There are, however, some positive signs of change. The latest versions of Plan Colombia and the Merida Initiative offer a more balanced approach, with programs oriented to assist vulnerable populations, such as at-risk youth, crime prevention, judicial reform, and alternative development. Despite some reallocation of resources, the distribution continues to reflect a narrow security perspective and a partial view

of drug policy. A good example is Colombia where 92% of the national drug policy budget goes to the demand side (production, eradication, etc.), with only 8% going to prevention measures and the health system. This is a clear bias in a country that faces a growing problem of consumption.

The “short-sheet effect” complicates the management of resources at the national level and the definition of priorities, all in a context of severe scarcity. In the case of Central America, Jose Miguel Cruz (2014) demonstrates how “local elites maneuvered to maintain and promote the old-regime security operators at the helm of law-enforcement institutions.” Cruz argues that resources are misallocated by the fixation on waging war on drugs, rather than on addressing the longstanding social causes of crime and the egregious lack of institutional accountability. The balance is that after years of cooperation some countries are crumbling under the weight of crime and widespread corruption. According to the “Just the Facts” project: “A lack of transparency leads to a lack of debate about consequences and alternatives, for human rights, for civil–military relations, and for the United States’ standing in the region” (Isaacson 2013).

Conclusion

This chapter described four main displacement effects of the supply-reduction strategy in Latin America: the “balloon effect” (the displacement of the targeted activity to another location), the “cockroach/diaspora effect” (the displacement of the targeted criminal groups to another territory), the “butterfly effect” (the displacement of the impact of state intervention), and the “short-sheet effect” (the displacement of budget priorities). To explore recent changes in the drug market and organized crime in the region, we analyzed cocaine trafficking in 2000–2013, identifying a tipping point of the supply-reduction strategy in 2006–2008. In the tipping point, three sets of policy changes with respect to drug production and trafficking were introduced and generated a shock in the cocaine market: first, Colombia shifted tactics in drug interdiction and weakened the major criminal organizations; second, Mexico intensified its offensive against trafficking organizations; and, third, the United States stepped up its control over its Southwest border with Mexico. To identify the impacts and consequences of the supply-reduction policies, we analyzed how the cocaine market supply shock boosted the displacement effects. As result of this exercise we offer some preliminary findings.

First, supply-reduction efforts may play a role to increase the price and decrease drug consumption in the United States. They probably have a more limited effect in coca production and displacement of the supply chain to other markets where the availability of cocaine is stable or growing and consumption is higher.

Second, the displacement of supply routes brought negative consequences to those countries that assumed a larger role in the drug trade and whose local criminal organizations have become more actively involved in trafficking. In some cases this dynamic has been accompanied by increases in homicide rates, but that relationship is variable.

Third, with the available information it is difficult to measure the impact of the “cockroach/diaspora effect.” The diffusion of violence beyond national borders and the influence of foreign organizations on internal security are part of an ongoing research agenda that still lacks sufficient information.

Fourth, the “kingpin” offensive against large drug-trafficking groups contributed to the fragmentation of criminal organizations, and, in some cases, to the deterioration of local security conditions.

Fifth, the displacement effect probably overestimates the weight of exogenous variables, inflating the real influence of transnational drug trafficking in criminal violence in Latin America. It is clear that the drug trade and state responses to it had tangible impacts in the region, but they are neither unique nor the most important explanation.

Sixth, the supply-reduction policy bias in the international security cooperation, especially with respect to the United States, led to the reallocation of resources in response to changes in routes and markets. The fixation on waging war on drugs has created tensions with the needs and priorities of source and transit countries. Despite some rebalancing, drug policy budgets continue to follow a narrow security vision, one concentrated on supply reduction.

Overall, we find that supply reduction through disruption and interdiction can reduce and redirect cocaine trafficking but at the cost of negative outcomes and collateral damage, at least in the short term. From this perspective, for Latin American countries the “benefits” of maintaining an anti-drug strategy that emphasizes interdiction are far outweighed by the costs in terms of instability, insecurity, and public health problems. The supply-reduction effort generates an unbalanced approach that distorts international cooperation and often overlooks the most important problems in Latin America: weakness of state institutions, the lack of the responsibility and accountability of national elites, and social vulnerabilities that foster criminal economies. The supply-reduction bias is beginning to change, but perhaps more in discourse than in practice.

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Part VIII

Responding to the Problem and Problems of Drugs in Society

Drug Law Enforcement

Andrew Golub, Alex S. Bennett, and Luther C. Elliott

Introduction

This chapter looks at the history and purpose of America's drug law enforcement and how they inform current issues. Drugs themselves have not been the primary basis for drug law enforcement. Indeed, the development and use of drugs has been central to fighting disease, reducing pain, increasing productivity, improving mental health, and enjoying life. Drug law enforcement has been driven by drug-associated problems and other objectives. Traditionally, drug abuse has been associated with a myriad of social problems ranging from educational failure, to unemployment, physical and mental health problems, domestic violence, family dissolution, theft, street violence, and organized crime. However, the interrelationship among these problems is complex. Drugs themselves and drug use are often blamed for these problems (National Drug Intelligence Center 2011). However, it is often the case that broader social problems lead to problematic drug use and exacerbate health and social problems. Thus, seeking to address drug use may not lead to the broader social improvements desired. Another problem is that drug policy has been historically used for other purposes. Drug law enforcement has been associated with discriminatory practices (Courtwright 2001; Musto 1999). As a result, many argue that drug law enforcement itself has been a major cause of much social tension and strife.

This chapter examines the historical and social construction of America's drug law enforcement. We illustrate the concerns raised above in a brief historical review. This background places today's concerns about drugs in context. Indeed, contemporary policy discussions today seek to remedy past injustices by examining how drugs are defined, drug law enforcement practices, the use of imprisonment, and punitive

tactics more generally. In a subsequent section, we examine how in the first 15 years of the twenty-first century the types of drugs and their uses have expanded greatly. Ultimately, we view drug law enforcement in the United States as part of the nation's broader ongoing cultural evolution. Most importantly, public policies including drug law enforcement can serve as reactions to social, cultural, and technological changes but can also be a force for a better society. This expanded perspective provides an informed basis for consideration of drug law enforcement implementation and reform.

Drug law enforcement history in the United States

This section reviews how the cultural context and meanings ascribed to drug use have shaped drug law enforcement. The complex history of drugs and drug policy in the United States has been heavily affected by technological advances, urbanization, population movements, and the restructuring of social and economic life. A central issue has been a massive decline in informal social control resulting from the US industrial revolution during the nineteenth century. Following the change from a primarily agricultural economy, the United States experienced a rise in the role of the state with its formal mechanisms of socioeconomic regulation, in particular policing and the reliance on incarceration. Many of these changes emerged during the Progressive Era at the turn of the twentieth century, which is also when the federal government's war on drugs took form.

This evolutionary process has been heavily influenced and at times even dominated by less than salutary concerns. There is now a solid body of research on the history of federal drug law enforcement. Musto's (1999[1973]) influential historical analysis *The American Disease: The Origins of Narcotic Addiction* was an important early contributor. This work established how perceived threats of minority drug use and its impact on social order regularly led to elevated drug law enforcement aimed at minority groups at times of socioeconomic uncertainty. In this manner, a major role of drug law enforcement has been as a mechanism of social control. Building on this perspective, other scholars have described the characteristics of *drug panics*, a process by which moral entrepreneurs (particularly politicians, religious leaders, and members of the news media) construct public concern to suit their political and economic goals, how they play on public fears and prevailing prejudices, and how they can and have regularly hijacked the process of more thoughtful drug policy development (Jenkins 1999; Reinerman and Levine 1997; Orcutt and Turner 1993).

Drug law enforcement and drug abuse control more generally was one of many state-sponsored social engineering programs of the Progressive Era, bringing economic and social regulation designed to enhance productivity as well as provide urban infrastructure, social welfare institutions, and education. (Wiebe 1967; Erlen and Spillane 2004). For many, life became more complex in urban environments as new needs arose. The unprecedented growth of many cities outpaced municipal

governments' abilities to adequately meet the demand for services. In this pivotal period, city planners and residents increasingly associated urban problems with recent immigrants and migrants as populations of cities became more diverse and less uniformly white. During this period, new and powerful drugs (especially cocaine and heroin) were synthesized and became widely used for a variety of purposes (Goodman, Lovejoy, and Sherratt 1995; Courtwright, Joseph, and Des Jarlais 1989; Acker 2002). Many people developed problematic drug habits involving these and other widely available drugs, including morphine and opium. Use of drugs expanded to new populations, including members of the lower classes and ethnic/racial minorities. This contributed to the declining image of drugs such as cocaine and heroin. Users became stigmatized as either hedonists or criminals and the drugs themselves became demonized.

Federal drug regulation started with the 1906 Pure Food and Drug Act requiring that products containing drugs be labeled with content and dosage (Spillane 2004). This reduced the widespread promotion of medicines containing strong substances and their inadvertent use. In 1914, the Harrison Narcotics Act effectively criminalized nonmedical use of cocaine and opiates such as heroin; at the time of writing, this year (2014) marks the 100th anniversary of the Act that served as perhaps the official starting point of federal drug law enforcement. Subsequent to passage of the Harrison Narcotics Act, domestic drug convictions and international drug control efforts intensified. During this period the fight against drugs was waged by both the new law enforcement and medical experts both seeking to establish their ownership of the drug problem (Bennett 2009a; Acker 2002; Hickman 2004; Tracy and Acker 2004). A split trajectory emerged whereby better-to-do medically prescribed users experiencing problems were treated as patients, in hospitals. Poorer, recreational street users were treated in the criminal justice system, especially if they were minorities.

The simplistic construction of the drug problem as primarily occurring within African American communities can in part be traced to sniffing cocaine in the early twentieth century (Musto 1989). At the end of the nineteenth century African Americans experienced emancipation from slavery. In this period, African Americans were increasingly exerting their rights and advocating for the benefits of full citizenship. In response, Southern whites sought mechanisms to control African Americans' newly found freedoms, including the Jim Crow policies of segregation, new restrictions on voting, and outright intimidation through the Ku Klux Klan, cross burnings, and lynching. Drug law enforcement was another mechanism that served the larger purpose of social control of the newly emancipated African American population. Musto (1999, 7) describes the situation as follows:

Cocaine was especially feared in the South by 1900 because of its euphoric and stimulating properties. The South feared that Negro cocaine users might become oblivious of their prescribed bounds and attack white society.... The fear of the cocaineized black coincided with the peak of lynchings, legal segregation, and voting laws all designed to remove political and social power from him.

A 1914 editorial entitled “Negro Cocaine ‘Fiends’ New Southern Menace” captures the blatant nature of the concern, exemplifies the construction of the race–drugs nexus, and demonstrates how such mainstream influential media as the *New York Times* have a history of participation in drug panics (Williams 1914).

By the 1920s and 1930s, the alarm over addiction to opiates and cocaine had subsided (Carroll 2004a, 2004b). Much of the nation’s attention was directed to the myriad issues being attributed to the demon rum, which led to national alcohol prohibition (1920–1933) (Jenkins 1999; Campbell 2000; Reinerman and Levine 1997). Alcohol prohibition has been linked to anti-immigrant fervor, especially disdain for Irish immigrants. It also resulted in the growth of organized crime as folk heroes who provided the still highly desired alcohol that was otherwise prohibited by a moralistic and unpopular government. After prohibition, law enforcement and other vested stakeholders redirected attention and resources toward the putative dangers of widespread marijuana use, especially among African Americans and Mexican Americans. The 1937 Marijuana Tax Act criminalized the use and possession of marijuana (Anslinger and Cooper 1937).

Meanwhile, heroin was beginning its comeback, despite its illegal status (Peele and Brodsky 1997; Tobey 2005; Malcom X and Haley 1966; Bennett 2009b). While the heroin user in the first two decades of the twentieth century was primarily male, young, and white, by the mid-to-late 1930s more and more African Americans were thought to be using heroin. This resulted in a new drug panic and law enforcement efforts targeted at despised minorities. Courtwright (2001, 151) notes that the following public perception prevailed by the 1950s:

[The] model addict profile was that of a young black man [in his twenties].... Relatively few middle-class whites, insulated by increasing residential distance, had anything to do with the drug. This social fact would prove of considerable political significance. Suburban voters, perceiving that tough law enforcement kept hard drugs out of their own neighborhoods, knew that the penal consequences of such policies would be borne, not by their own children, but by those of distant inner-city residents.

This new stereotype of the heroin user was used to justify a particularly punitive response. For the first time, the federal government enacted mandatory minimum sentences under the 1951 Boggs Act and then again with the 1956 Narcotic Control Act.

In the late 1950s and early 1960s, both the number of drugs and the types of users expanded (Courtwright 2001; Schneider 2008). In addition to heroin, people from diverse backgrounds were consuming barbiturates, amphetamines, LSD, PCP, marijuana, and other pharmaceuticals. While there was considerable regional variation in patterns of use and the racial/ethnic and socioeconomic characteristics of the user, the dominant stereotype of the inner-city minority heroin user – constructed by the media and other claims-makers – persisted in tandem with newer images that emerged of college students, hippies, and veterans using a wide range of drugs. As the images of drug users expanded, drug policies were shifted away from the punitive

and toward the therapeutic. By the late 1960s and early 1970s, legislation emphasizing prevention and treatment, rather than strictly punitive measures, became more commonplace. These shifts are reflected in the names of several key drug policy acts from this period, including the 1966 Narcotic Addict Rehabilitation Act and the creation in 1971 of the Special Action Office for Drug Abuse Prevention.

The 1960s and early 1970s were also a period of substantial domestic turmoil and reactionary response (Musto 1999; Kuzmarov 2009; Musto and Korsmeyer 2002). Social movements focused on ending racism, concentrated poverty, and the war in Vietnam. Counter-movements also emerged. American cities were under siege from protests and counter-protests that turned violent. Meanwhile, drug use and its associated problems were getting more complex. Youths and young adults heralded a period of widespread experimentation. In 1971, President Richard Nixon officially responded by declaring a War on Drugs. This war was not a unique new approach, nor did it address a new problem; rather, it effectively perpetuated existing policies and helped shift the emphasis toward punitive policies and greater social control.

The dominant image of a drug user as an inner-city African American was greatly reinforced in the 1980s with the growth in use of crack cocaine. The profound impact of crack cocaine on African American communities was greatly exacerbated by the punitive response fueled by a drug panic (Johnson, Golub, and Fagan 1995; Belenko 1993; Brownstein 1996). Drug law enforcement policies included the imposition of harsh mandatory minimum sentences and targeted law enforcement in minority neighborhoods. The media and other political, moral, and religious claims-makers trumpeted stereotypes of poor, disaffiliated, thieving, sexually voracious, and violence-prone African Americans smoking crack cocaine. In contrast, stereotypes of powder cocaine users more often reflected more affluent and white populations. Sentencing guidelines reflected these dual stereotypes: a user caught with one gram of crack often received the same sentence as a user caught with one hundred grams of cocaine. During the 1980s and into the 1990s, drug law enforcement activities disproportionately affected African Americans and resulted in high rates of incarceration, family dissolution, voter and educational disenfranchisement, and ineligibility for income transfer and in-kind policies otherwise designed to combat widespread poverty in African American communities. The cumulative impact of drug law enforcement on African American communities from the late nineteenth century to the present has been considerable. Alexander (2012) goes so far as to suggest that these policies operate as the New Jim Crow, in essence serving the function of racism without the need for outright bigoted statements – effectively providing racism without racists.

While the use of heroin and cocaine continued among various groups, by the early 1990s a major shift in drug use was underway. Many youths, but especially urban African Americans, turned away from the use of cocaine and heroin and increasingly began smoking marijuana, especially in a *blunt*, an inexpensive cigar in which users replace the tobacco with marijuana (Golub et al. 2004). This brings us up to the twenty-first century regarding the history of recreational use of illegal drugs. The next section examines several current issues rooted in this history.

Meanwhile, however, the development of US drug policy has become more complex as the problematic use of legal drugs with or without a prescription has grown dramatically. Today, widespread prescription opioid misuse and its related health hazards – including overdose and death – have emerged as central public health concerns, especially for recent veterans returning from Iraq and Afghanistan (CDC 2011; ONDCP 2011; IOM 2012). Fatal drug overdoses doubled during the first decade of the new millennium and much of that increase has been attributed to prescription opioids, particularly when overprescribed, diverted, or taken with other contraindicated substances such as alcohol or benzodiazepines (Darke 2003; Coffin et al. 2003; Darke and Hall 2003).

Some Current Issues in Drug Law Enforcement

This section examines three current issues in drug law enforcement: quality-of-life policing, mass incarceration, and marijuana legalization. These major issues represent some of the historical residue of previous drug law enforcement practices. Each is currently being reconsidered in policy circles, which suggests that improvements will be coming and possibly soon.

Quality-of-life policing

The Crack Era and its associated open-air markets, gun use, violence, property crime, and overall disorderliness challenged New York City in the mid-1980s and into the 1990s (Johnson, Golub, and McCabe 2010). Rudolph Giuliani was elected mayor on a tough-on-crime platform. In the 1990s, the New York City Police Department (NYPD) instituted a variety of cutting-edge programs, including the following: quality-of-life or fixing broken windows policing based on the idea that restoring order to a community will force crime out (Kelling and Coles 1996; Wilson and Kelling 1982); CompStat as a geographical command and control system (Silverman 1999); and stop-question-and-frisk procedures to get guns and drugs off the streets. Concomitantly, New York City experienced a renaissance in cleanliness, orderliness, tourism, real estate value, and crime reduction. Officials have been quick to credit their policing programs for the improvement (Bratton and Knobler 1998; Giuliani and Kurson 2002). These programs have been lauded and adapted for use in other communities. Critics of these policies pointed out that the decline in the popularity of crack had already been underway and accounted for much of the improvement in New York City (Johnson, Golub, and Dunlap 2006; Curtis 1998). Since the 1990s, the continuation of these drug law enforcement policies may have been less important as the prevailing drug-of-choice has shifted from crack to marijuana, which has been associated with far fewer problems.

Quality-of-life policing was further criticized for being overly aggressive and having a differential impact on low-income and minority groups (Greene 1999;

Harcourt 2001; McArdle and Erzen 2001). In particular, the program called for arresting persons for minor offenses, such as sleeping on a subway car, aggressive panhandling, or smoking marijuana in public view. Arrestees for these minor charges would be brought to a detention center and held for the full 24 hours allowed, pending their seeing a judge for arraignment. Many of the charges were subsequently dismissed, resulted in minor fines or a sentence for the amount of time already served awaiting arraignment. This pre-arraignment detention was referred to as serving your time up front. Quality-of-life policing was intended to restore order in highly public locations. Analysis of New York City arrest data indicates that the most common misdemeanor charge in the 1990s was for smoking marijuana in public view, that over time these arrests occurred less often in locations central to business or tourism, that most of the arrestees were black or Hispanic, and that these minorities were more likely to be detained pending arraignment than their white counterparts (Golub, Johnson, and Dunlap 2006, 2007; Levine 2013). The stop-question-and-frisk activity was also heavily criticized for its aggressive application and its disproportionate impact on minorities, including censures by New York State's Attorney Generals as well as Amnesty International (Spitzer 1999; Amnesty International 1996; Schneiderman 2013).

Change may be underway in New York City. William Di Blasio, former New York City Public Advocate, won the 2013 election for mayor of the city (Barbaro and Chen 2014). Improving race relations and ending stop-question-and-frisk were among his campaign promises. Moreover, the reform of stop-question-and-frisk has been the subject of an ongoing court case in the city since 2013. On the other hand, implementation of reforms could potentially be hampered by the mayor's choice of police commission, William Bratton, the same individual who led New York City's tough-on-crime initiatives under Mayor Giuliani. Time will tell.

Mass incarceration

As a result of the war on drugs, the United States has seen a dramatic expansion in its prison population, an expansion that has disproportionately affected African Americans (Western 2007; Blumstein and Beck 1999; Drucker 2011). From the 1920s through the early 1970s, the US incarceration rate held steady at about 110 prisoners in state and federal prisons per every 100,000 residents, or 0.1% of the population (Blumstein 2011). Afterwards, the rate of imprisonment rose steadily until 2009 when it reached 500, a more than four-fold increase (Guerino, Harrison, and Sabol 2011). This incarceration rate is by far the highest in the world, higher than in Russia, South Africa, and Chile (Blumstein 2011). This increase was driven in large part by a 10-fold increase in incarceration for drug offenses. Much of this increased enforcement and punishment resulted from the drug panic surrounding crack use among black and Latino urban populations, and the sentencing disparities between crack and powdered cocaine reviewed above. In 2010, the US incarceration rate experienced its first decline since 1972, a decline of 0.3%.

As of 2010, 1,612,395 persons were incarcerated in state and federal prisons (Guerino, Harrison, and Sabol 2011). More than half of all federal prisoners and just under one-fifth of state prisoners were serving time for a drug offense. Mass incarceration disproportionately affected African American men (3.1% incarcerated) and to a lesser extent Hispanic men (1.3%) than white men (0.5%). There was also an ethnic/racial disproportionality among the much lower rates of incarceration for women.

In 2010, Congress voted unanimously to reduce the 100-to-1 disparity in sentences for crack versus powder cocaine (Apuzzo 2014). Since then, President Obama and his administration have sought to reduce mandatory minimums for nonviolent drug offenders. In 2013, Attorney General Holder noted, "Too many Americans go to too many prisons for far too long and for no good law enforcement reason. This imposes a significant economic burden – totaling \$80 billion in 2010 alone – and it comes with human and moral costs that are impossible to calculate." These drug law enforcement reform initiatives have received bipartisan support. While the extent of this policy shift remains to be seen, the long period of mass incarceration in the United States may soon come to a close.

Marijuana legalization

Since the 1990s there have been policy changes in the official understanding of marijuana in the United States. Marijuana is currently classified as a Schedule I Controlled Substance with high abuse potential, no accepted medical use, and a lack of potential for safe use. In contrast, marijuana has been used for a wide variety of therapeutic uses for more than five millennia and has many current possible uses, including for remediation of the appetite loss and other symptoms associated with HIV/AIDS and chemotherapy and lowering eye pressure for those with glaucoma (Bostwick 2012; Mechoulam 1986).

In direct contradiction of the federal classification for marijuana, many states have passed laws that do recognize the medical potential of marijuana (Marijuana Policy Project 2014). In 1996, Arizona and California held ballot initiatives asking whether marijuana use should be allowed for medical purposes. Both initiatives passed and both states subsequently passed legislation legalizing medical marijuana. As of early 2014 when this chapter was written, 20 US states and the District of Columbia have legalized medical marijuana. As legal scholars examining medical marijuana laws have demonstrated, state-based marijuana medicalization has had to operate outside of federal statutes, effectively violating federal prohibitions when deviating from the narrow allowances made for therapeutic research programs (Pacula et al. 2002).

Two states have reformed marijuana policy even further. In 2012, a majority of Colorado and Washington voters elected to legalize marijuana. Both measures were subsequently approved by their states' legislatures. Marijuana is now legal for recreational use by state law (but not federal law). While acknowledging that

marijuana use and possession remain federal crimes, James M. Cole, Deputy Attorney General under President Obama, released an important memo effectively removing the threat of federal interference or enforcement with state-based legalization (Cole 2013).

Types of Drug Use Today

Drug law enforcement today must focus on the many reasons why people use drugs, even when their use is illegal, which beyond the pharmacological effect of the drug itself also involves the user's mindset, and the context in which use occurs. This provides insight into the underlying basis of the US drug policy problems. Today, the number of drugs, types of uses, and prevalence of use of illegal drugs, prescription drugs without a prescription, and problems with use of legal substances (such as alcohol) have increased dramatically from when the nation's drug law enforcement efforts began a century ago. We refer to this phenomenon and the current historical period as a Pharmacological Revolution. At this time, the range of drugs, purposes, and populations to be covered under the nation's drug laws have been greatly expanded and the problems and potential responses have become even more complex. Accordingly, the use of drug law enforcement to target use of a few illegal drugs in select populations is perhaps more simplistic and misinformed and effectively (if not overtly) racist than at any previous time in US history.

The following list catalogues a range of very different reasons for drug use, varying from taking a break from the demands of society to improving conformance to those expectations and a variety of perhaps intermediary purposes:

- Recreation/Enjoyment
- Making Meaning
- Medication/Self-Medication
- Cosmetic Pharmacology
- Performance Enhancement

A major focus of the need for drug abuse control centers around an image of people using illegal drugs to get high as a leisure activity for recreation or enjoyment. This limited viewpoint greatly underestimates the extent that drug use is embedded within a much larger lived experience. Use of drugs can involve much more than seeking an altered state of consciousness. There can also be a major element of social identification involved. Drug use can represent a larger affiliation with a group or an idea, as illustrated by Becker's (1953) seminal "Becoming a Marijuana User." Social activities, use by friends, popular images, references in music, myths, availability, potential legal consequences, and youthful rebellion can impart added significance to the behavior (Jonnes 1999). In this manner, drug use occurs within a social and cultural context and is part of the process by which people construct meaning in their lives on their postmodern journeys. Based on analysis of

the succession of drug eras in the late 1900s, the lead author developed a theory of subcultural evolution and drug use as a partial explanation of the sociocultural forces involved (Golub, Johnson, and Dunlap 2005, 218).

A theory of subcultural evolution and drug use: Drug use emerges from a dialectic of the prevailing culture (and especially drug subcultures) with individual identity development. Use of a drug is clearly an individual's decision but it is the prevailing drug subcultures and each person's place relative to them that impart a greater significance to the activity. Conversely, individual decisions to adopt, adapt or reject aspects of the prevailing drug subcultures cause the subcultures to evolve as well as lead to the emergence of new ones.

A postmodern sensibility emphasizes the multiplicity of prevailing cultural frameworks, the interacting of themes, and the centrality of individual agency (Green 2000; Allan and Turner 2000). Ulrich Beck (2000) described a *reflexive cosmopolitanization* whereby individuals build their identities based on multiple affiliations, leading to a broad intermingling of ideas and behaviors without reference to national borders. Ann Swidler (1986) provided a pragmatic view of culture as a toolkit of habits, skills, and styles from which actors construct their strategy of actions and create meaning in their lives. Dick Hebdige (1979) noted that subcultural identity manifests in decisions about self-presentation such as clothing, style, language, and use of public space.

This subcultural framework has been used to understand the natural history of various *drug eras*, a period in which widespread use of a particular drug prevailed, in the late 1900s and early 2000s including the Heroin Injection Era of the 1960s and early 1970s, the Crack Era of the late 1980s and early 1990s, and the Marijuana/Blunts Era prevailing since the 1990s (Bennett and Golub 2012). There is substantial evidence that for many who become heavily involved with drug use in a specific era, their drug use is very much about identity and less about dropping out of society or for leisure. Not every user becomes heavily involved with a drug era or the primary drug that comes to define that era. However, focusing on heavy users within an era provides insights into the context in which use becomes problematic and ultimately a window into a prevailing drug culture. Preble documented how many users during the Heroin Injection Era came to organize their daily lives around their habit: performing various hustles, nondrug crimes, a variety of drug sales and distribution roles, chasing the best bag of heroin, locating a safe place to inject, persuading others to share drugs or needles, avoiding police, and finding free food, shelter, and clothing (Preble and Casey 1969). Drug users often described their heroin habit and associated activities as "taking care of business," an activity that provided them with a sense of purpose that for many born into poverty could not have been achieved in conventional society. Similarly, during the Crack Era users attached symbolic importance to their extended efforts to obtain money and drugs during binges lasting for hours and even days. They referred to their efforts as missions, adopting jargon from *Star Trek* (Williams 1992). Our larger point is that dealing with problems of

drug abuse involves more than arresting law breakers. It is necessary to consider the complex and personal process by which individuals navigate through life in the face of constraints and opportunities and how they find meaning in life.

These first two reasons for drug use – enjoyment and making meaning – represent reactions contrary to prescribed mainstream norms and are mostly associated with illegal drugs. These uses are the most closely associated with drug law enforcement as a potential solution. Other uses for drugs represent efforts to cope with contemporary life, not necessarily escape, mostly involving drugs that are currently legal with a prescription, and thereby complicate drug law enforcement efforts. Self-medication can be understood as an effort to keep problems in check in order to otherwise participate in mainstream society. Individuals may also self-medicate to deal with mental health problems or pain when they lack the resources to obtain mainstream services. In a sense, this represents a neutral use of drugs – to be normal or be able to operate in light of basic mainstream expectations. However, what is normal? Why is normal still constructed on white middle-class ideals? Moreover, given that improved functioning can be achieved with some drugs, why settle for normal, when one can do better?

Indeed, the medical and pharmacological industries have clearly been at the forefront of this change. Dumit (2002) argued that there has been a fundamental philosophical shift over the past several decades. In the nineteenth century, medicine was understood as a cure, often a one-time administration that returned the body to its normal, otherwise healthy status. Dumit noted a new pharmaceutical worldview that has accelerated since the 1990s, which presumes that the body is inherently ill and therefore in need of medication for maintaining its proper state. We now have various drugs for treating attention deficit hyperactivity disorder (ADHD) such as Ritalin and Adderall (DeGrandpre 2000). We also have a variety of drugs for controlling depression, such as Valium, Prozac, Zoloft, and Wellbutrin (Kramer 1993), and a proliferation of drugs to improve sexual performance impeded by erectile dysfunction (Loe 2004). Treatments have been discovered for conditions and concerns that in the past people had accepted as normal and learned to cope with. This potential has also raised concern that there may be over-diagnosis of problems by care providers and drug manufacturers in a cynical pursuit of profits. Direct-to-consumer marketing by pharmaceutical companies adjures viewers to “check with their doctor or pharmacist” as to whether a new drug may relieve their condition or improve their performance (Conrad 2007; Crister 2005). The implication is that problems or concerns that one may face are treatable through drugs, leading to what Conrad referred to as the medicalization of society. Overall, there has been a massive increase in substance use, much of which may be unnecessary. There has been an increase in the number and quantity of drugs that can be potentially diverted. There has also been a growing concern with the misuse of drugs by the person for whom they were prescribed, including such behavioral practices as complaining about the need for more drugs, unsanctioned dose escalation, concurrent use of alcohol, or alternative route of administration such as sniffing or injecting drugs originally intended for oral use (Larance et al. 2011).

In this way, doctors are losing control over the use of those drugs that are under the prescription system.

For some, preference is starting to replace need as a basis for drug use. Kramer's (1993) influential book, *Listening to Prozac*, raised serious questions about how we decide what are normal feelings for people to experience, what personality characteristics should be considered problematic, and who decides. He reported a variety of curious responses to Prozac by patients, such as: "I felt more like myself when I was on the drug than when I was not"; "It was a mood brightener"; and "My friends liked me better when I was on drugs." These observations illustrate *cosmetic pharmacology*, the use of drugs to enhance your appearance just as one might have cosmetic surgery to remove fat, reduce frown lines, or enhance one's breasts.

For others, drugs have become a way to enhance their performance in order to keep up with the demands of contemporary life. This is especially the case with caffeine and amphetamines. The question arises as to the extent that Adderall and other stimulants are being used for performance enhancement either with medical supervision, as an aberrant behavior outside of prescribed use, or through diverted supplies (DeGrandpre 2000). In their book *Game of Shadows: Barry Bonds, BALCO, and the Steroids Scandal that Rocked Professional Sports*, Fainaru-Wadu and Williams (2006) discussed this larger problem with regard to baseball, running, and other professional and Olympic sports but especially with regard to Barry Bonds' stellar career and the network developed to help him reach his maximum potential through steroids and other performance-enhancing drugs. Similarly, Walsh (2013) exposes Lance Armstrong's use of steroids, human growth hormone, and other drugs to win the coveted Tour de France title seven times as he examines professional cycling's intense challenge to keep performance-enhancing drugs out of the sport. This raises the concern that once a few athletes take performance-enhancing drugs, others can choose not to, but only at the risk of forsaking their career goals (Murray, Maschke, and Wasunna 2009). This represents a form of social coercion urging individuals to use drugs to enhance their performance. Clearly drug law enforcement must also address these vocational abuses of drugs and not just recreational drug use to get high.

Control of performance-enhancing drugs can be quite challenging when individuals' careers depend on such use, as does the success of an organization. Greatly complicating this policy problem is the nation's need for a military capable of its best performance both for individual survival and for successful completion of missions. Performance-enhancing substance use has been common in the military, especially during conflicts, and not just for recreational purposes (Bergen-Cico 2011; Finkel 2009). In the twenty-first century, the US Military has been engaged in two extended conflicts in Afghanistan and Iraq, referred to as Operation Enduring Freedom (OEF) and Operation Iraqi Freedom (OIF). Service members routinely take substances such as Dexedrine, NoDoz, and Red Bull, commonly called "go pills." As a comedown to obtain needed sleep and to suppress anxiety, service members routinely take other substances, including Ambien and Restoril, commonly called "no-go" pills. To deal with pain while deployed and after returning, many service

members are taking powerful new opioids, including OxyContin and Vicodin. Because of the widespread use of drugs by military personnel and veterans, a *New York Magazine* article dubbed this, “The Prozac, Paxil, Zoloft, Wellbutrin, Celexa, Effexor, Valium, Klonopin, Ativan, Restoril, Xanax, Adderall, Ritalin, Haldol, Resperdal, Seroquel, Ambien, Lunesta, Elavil, Trazodone War” (Senior 2011). Many of these veterans continue to use various prescription drugs upon return to civilian life to help them cope with their problem. Interestingly though, many of them report that medicating or self-medicating (i.e., with or without the recommendation of a doctor) with marijuana has proven to be the best medicine for coping with combat-related post-traumatic stress disorder or PTSD (Elliott et al. in review).

Conclusion

Developing appropriate and effective drug law enforcement policy has become more difficult over time. The mistakes prevailing during the twentieth century might be ameliorated by taking efforts to reduce its disproportionate impact on minorities. To this end, policy efforts are revisiting programs such as quality-of-life policing and stop-question-and-frisk, reducing mass incarceration, and exploring reclassification of marijuana for medicinal and possibly recreational use. However, this will only be part of the improvement needed.

We believe that the definition of what is a drug, drug laws, and their enforcement is not an isolatable problem. These efforts must be incorporated into broader efforts to guiding the US cultural evolution to reflect diversity in values, tolerance of others regardless of race, ethnicity, gender, class, and identity as well as associated lifestyle choice (Schafer 1998). A more comprehensive solution will also require addressing broader social and economic inequalities that disproportionately impact minorities. Drug panics have focused US drug law enforcement efforts on the recreational use of drugs by minority ethnic and political groups that are perceived as a threat to the status quo. This response has been insufficient and misguided in the past. This approach is even less appropriate today. Drug law enforcement needs to look more broadly at the variety of reasons that drug use is widespread as part of a prevailing Pharmacological Revolution. Policies need to focus on helping youths learn to make intelligent choices about drugs, including those that are legal (such as alcohol, cigarettes, and energy drinks), pharmaceuticals, and illegal drugs. Policies need to focus on helping everyone avoid drug-related problems and helping those with problems to resolve them, even for use of illegal drugs. Such policies are collectively known as harm-reduction practices (see Bennett 2014; Larson and Lorenz 2012). Policies need to be developed to protect people from the dangers of coercive use of performance-enhancing drugs in order to achieve in sports, at work, or in school. Drug policy needs to provide compassionate drug law enforcement personnel with a mandate to intelligently serve the best interests of the nation. As a society we need to come to terms with our chemical and human potential to help individuals construct healthy, productive, and meaningful lives during this Pharmacological Revolution.

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Drug Abuse Prevention through Early Childhood Intervention*

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Overview

Significant progress has been made in understanding effective approaches to prevention of drug abuse over the past few decades, in part because of the careful attention given to understanding basic developmental processes involved in the transitions to drug use, abuse, and dependence. Drug abuse and dependence are disorders that interfere with the normal, healthy functioning of persons across the lifespan, and are preventable causes of medical and psychiatric problems and disorders, injuries, lost income and productivity, and family dysfunction. While the initiation of licit and illicit drug use, a necessary precursor to abuse and dependence, grows dramatically during the adolescent years, this behavior is preceded by proximal and distal biological, psychological, social, and environmental precursors originating as early as the prenatal period.

The life course developmental perspective suggests that individual and environmental factors interact to increase or reduce vulnerability to drug use. Vulnerability can occur at many points along the life course but peaks at critical life transitions. In addition, because vulnerability to drug abuse involves dynamic intrapersonal (e.g., temperament), interpersonal (e.g., family and peer interactions), and environmental (e.g., school climate and neighborhood resources) influences, prevention intervention research must target interactions between individuals and social systems across the life span. Drug abuse prevention is often discussed in terms of risks that occur in the middle-childhood years, the period just prior to the time when social and

* The views and opinions expressed in this chapter are those of the authors and should not be construed to represent the views of the National Institute on Drug Abuse or any of the sponsoring organizations, agencies, or the US government.

contextual factors can place youth at heightened risk of initiation of tobacco, alcohol, and drug use. In this chapter the role of early development in context from the prenatal stage through early childhood is explored with regard to risks and protection for the development of subsequent problem behaviors including substance abuse. The chapter is divided into four major sections: child development, risk and protective factors, interventions and findings, and how interventions work. Examples of interventions are provided from early childhood interventions supported in full or in part by the National Institute on Drug Abuse (NIDA). NIDA's mission is to lead the nation in bringing the power of science to bear on drug abuse and addiction. Drug abuse prevention research at NIDA is theory driven and takes a lifespan approach.

Child Development

Collection of data from the National Survey of Drug Use and Health (NSDUH) on age at first use of illegal drugs across the United States begins at age 12 years (SAMHSA, 2013), with data from 2012 indicating that 3.5% of 12–13-year-old children have used an illegal drug in the past month (including inappropriate use of prescription drugs), 2.2% are current alcohol users, and 1.2% are current tobacco users. Thus, for those youth who will eventually use drugs, early childhood is chronologically quite removed from the actual event of initiating drug use. The question then arises: “Why is early childhood important for drug abuse prevention?”

The period of development beginning prior to conception and continuing through the transition to elementary school is characterized by rapid orderly progressions of normal patterns of physical, cognitive, emotional, and social development. A variety of factors can interrupt or interfere with achieving these milestones. Prevention interventions designed specifically for early developmental periods can address these factors by building on existing family and child strengths and providing strategies and supports in areas that are underdeveloped or lacking.

An overarching conclusion drawn from current drug abuse prevention intervention research is that intervening early in childhood can alter the life course trajectory of children in positive directions (Kellam et al., 2008; Kitzman et al., 2010). The following discussions of child development and the life course perspective point out mechanisms through which a positive trajectory can be fostered even under difficult conditions for development such as poverty, trauma, and foster care. Other concepts presented in this chapter substantiate and clarify this conclusion.

Basic to the concepts presented in this chapter is an understanding of terms used in describing child development. Some of those descriptors are defined here.

Milestones

Milestones specify the age range by which most children have achieved or can perform the indicated physical, cognitive, social, or emotional task. However, this does not mean that a child who is well below the average on a milestone will not

eventually achieve that milestone; rather it can be achieved later in development. However, the further removed the effort to achieve a milestone is from its expected occurrence the more difficult it is to achieve.

Plasticity

Part of what makes it possible to achieve a milestone at a time later than expected is the ability of the brain to change, adapt, and reorganize. This type of brain activity is called plasticity (Weiss, 1949; Leighton et al., 1963; Kellam and Rebok, 1992). Very young children have the greatest neurological flexibility and potential for learning new skills and behaviors; brain structure stabilizes with age and becomes increasingly more difficult to alter.

Gene–environment interaction

Early childhood development is characterized by many biological changes, beginning in the prenatal period. These changes are influenced by a complex combination of factors. One such factor is the genes one inherits from one's biological parents. Another is the family context or environment into which the child is born and lives. Genetically controlled developmental processes and environmental factors interact with the child's personality, learning style, and other intrapersonal characteristics to influence the expression of specific genes which are then reflected in how the child adapts to his changing environment. The circumstances and events that occur during prenatal and early childhood development can greatly affect how the child functions throughout life.

Context

Context encompasses the physical, social, emotional, and relational aspects of the world in which one lives. The family context or environment is the primary context for child development. However, it is influenced by wider physical, social, economic, and historical realities – such as the family's socioeconomic status and safety (or lack thereof) of the community in which the family lives. As the child grows older and enters school, additional environmental contexts influence him or her more directly.

Life course trajectory

Life course trajectory refers to the potential impact of earlier life events on future decisions, events, and life circumstances. Many factors beyond the developmental status and unique characteristics of the child and the people with whom he interacts will influence life trajectory. Characteristics and experiences of the physical, social, economic, and historical contexts in which the child and his family live can affect

patterns of stability and change within the child (Elder, 1998). Thus, the wide variety of potential circumstances children may encounter throughout life means that unlike other aspects of development, life course trajectories do not occur in an orderly sequence of events. How a child responds to evolving events is influenced by his cognitive, emotional, and social development as well as his past history, his family relationships, and the world around him. Moreover, specific qualities of the child can either dampen or exacerbate these effects. For example, personality characteristics of the child may elicit positive or negative reactions from other family members, which may in turn affect future interactions with those or other family members (Patterson and Reid 1970; Lorber, Felton, and Reid 1984).

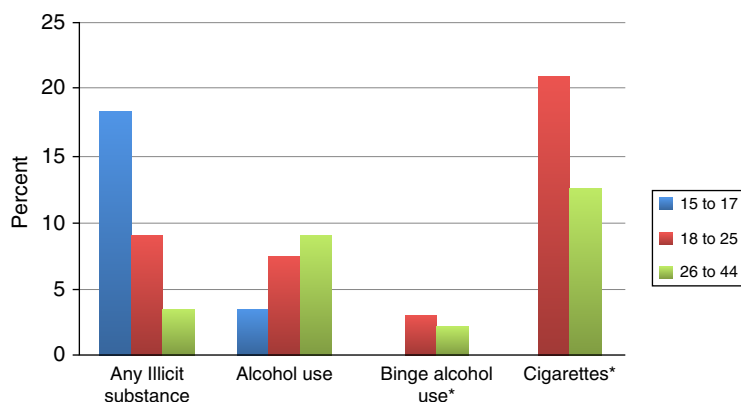
Early childhood development in context

Child development refers to the physical, psychological, emotional, and cognitive changes that occur from the prenatal period to the end of adolescence. Periods of child development are generally described in relation to the child's age. This chapter focuses on the following developmental periods: prenatal (the period between conception and birth), infancy and toddlerhood (birth to 3 years), preschool (ages 3 through 5 years), and transition to school (ages 6 through 8 years). The transition to elementary school is usually considered to be part of the transition to middle childhood/early adolescence (6 to 13 years) but is addressed in this chapter because it is a major and significant transition in the child's early development.

Child development occurs within context. In fact, even before a child is born, the context or environment plays an important role in development. Maternal use of alcohol, tobacco, and other drugs of abuse during the prenatal period can affect the fetus by crossing the placenta, creating fetal exposure. While most pregnant women do not use or abuse drugs and alcohol during pregnancy, some may use alcohol or other drugs before they find out they are pregnant. A report of the National Survey of Drug Use and Health (NSDUH), averaged across findings from 2011 and 2012 (SAMHSA, 2013), found that, among pregnant women aged 15 to 44, 5.9% reported illicit drug use in the past 30 days; 8.5% reported alcohol use in the past 30 days, and 2.7% reported binge drinking; and 15.9% reported smoking cigarettes in the past month. When looked at by age, younger pregnant women (ages 15 to 17 years) had higher rates of illicit substance use, compared to older women (ages 18 to 25 years and 26 to 44 years). Women 18 to 25 years had higher rates of cigarette use, compared to women 26 to 44 years of age (Figure 25.1).

The full extent of the consequences of substance use in pregnancy is not known; many individual, family, and environmental factors such as nutritional status, extent of prenatal care, and socioeconomic conditions make it difficult to determine the direct impact of prenatal substance use on the child. However, we do know that even small amounts of substance use have the potential to be adverse.

When considering the context of very early development, we generally think about the important role parents play in the life of a child born into the family.



*For ages 15 to 17: low precision; no estimate reported

Figure 25.1 Current substance use among pregnant women aged 15–44, by age, 2011–2012 combined. Source: SAMHSA (2013), Results from the 2012 National Survey on Drug Use and Health: Summary of National Findings

However, within moments after birth the infant's personality and health condition can also influence the parent–child relationship and physical environment in significant ways. For example, babies who are easy to manage, adapt well to routines, and are responsive to parent care tend to elicit more positive parenting behaviors, which will strengthen a growing, mutually satisfying parent–child relationship. On the other hand, babies who cry a lot, fuss when being changed and fed, and are not soothed by holding and rocking are more likely to be reacted to with frustration, impatience, and ignoring on the part of the caregivers. Facilitating positive behavioral strategies is the focus of these early childhood interventions for parents.

Over the months following birth, the child adapts to and integrates into the world around him as he makes further developmental gains, including brain development. Through practice the child becomes proficient at basic skills using his limited, but growing, sensory, motor, cognitive, and social capacities. As the infant learns to distinguish himself from others, he instinctively focuses his attention on the primary caregiver(s), usually parents. For optimal positive development to occur, the primary caregiver(s) should strive to consistently meet the child's needs, provide a predictable schedule, and provide developmentally appropriate stimulation. The closeness of the parent–child relationship during this early period of development provides a context for the child's cognitive development, his expectations about his world, and for secure attachment to his caregiver(s). In fact, throughout early childhood the family is the most important context for development. Parents play a number of roles in the development of social, emotional, and cognitive competence of young children, including establishing the structure and routines for parent–child interactions, maintaining a sensitive, warm, and responsive relationship style, and providing instructional practices and experiences that help the child acquire necessary developmental skills.

When a nurturing, responsive relationship does not exist, elevated levels of stress hormones can impair healthy brain development. Moreover, in situations where a caregiver cannot provide attention and nurturance because of a history of trauma, chronic stress, substance abuse, and/or mental health problems, the child is more likely to develop behavioral and other social, emotional, and cognitive problems. Abuse and neglect, social isolation due to illness or disability, and lack of constancy in the primary caregiver as in the case of institutionalized care are also linked to growth, cognitive, motor, social, and emotional problems.

As the child grows older, new transitions and associated challenges and opportunities occur. A major transition for young children is beginning elementary school. Even children who attended preschool or day care can find the rules for behavior and academic requirements associated with elementary school difficult to adapt to and achieve. Readiness for school is something that occurs over time with experience and practice. Parents and schools can assist children through this transition by ensuring children have mastered basic skills of identifying and correctly using colors, letters, and numbers. Once in school, teachers can help children to adjust by providing positive classroom management and attention to positive adjustment behaviors rather than misbehaviors.

The life course developmental perspective

The life course perspective reflects the broad understanding that the child's stage of life, aspects of his social and physical environments, and life events he experiences over time all contribute to his physical, psychological, emotional, and cognitive development (Bronfenbrenner, 1979; Elder, 1998). Figure 25.2 points out life course periods (stages of life), contexts, and life events (major life changes) that contribute to human development from birth through adulthood and salient interpersonal relationships that may occur (social fields and natural raters) (Kellam et al. 2011).

Life events or transitions, sometimes called sensitive, critical, or vulnerable periods, signify periods of change for children and their caregivers (Bornstein 1989; Brazelton 1992). Change occurring within and around the child during these critical periods present opportunities and challenges. Because change is already occurring and some children and parents need help in identifying and building the skills and resources needed to successfully negotiate such changes, prevention interventions are often planned to coincide with these transitions. The opportunities and challenges occurring at these points are called risk and protective factors.

Risk and Protective Factors

Research over the past three decades has tried to determine the origins and pathways of drug abuse and addiction, how the problem starts, and how it progresses. Many factors have been identified that help to differentiate those individuals more

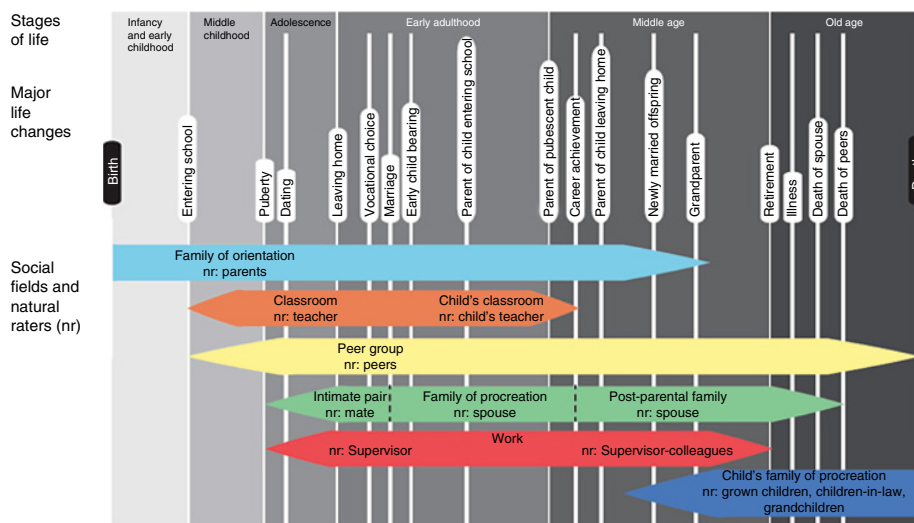


Figure 25.2 Life course social field concept. Source: Kellam et al. (2011), “The Good Behavior Game and the future of prevention and treatment.”

likely to abuse drugs from those who are less likely to do so (Hawkins, Catalano, and Miller, 1992; Catalano et al., 2011). Risk factors are qualities of a child or his or her environment that can adversely affect the child’s developmental trajectory and put the child at risk of later drug use or other behavioral problems. Thus, intervening early on proximal risk factors will reduce risks for problem behaviors in early adolescence, such as early initiation of drug use. Moreover, by adolescence, children’s attitudes and behaviors are well established and not easily changed. Thus, if not addressed through preventive interventions, early childhood risks can lead to immediate and long-term problems that put a child at greater risk for drug abuse later in development.

Risk for later substance abuse can occur at any point in development. To avert long-term effects of specific identified risks, intervention programs with risk-specific strategies have been developed and tested. The goal of these programs and strategies is to strengthen qualities of the child’s functioning and the contexts in which he is growing and developing. The intervention strategies listed below are specifically aimed at reducing risk factors and increasing protective factors in an effort to change the balance toward protection in the life of the young child (August et al., 2003; Catalano et al., 2003). Table 25.1 illustrates how specific risks can be addressed through age-appropriate strategies.

A particularly important category of risk is stress (Masten, 1989; McEwen, 2012). All children experience stress at some point. In fact, a certain amount of stress is positive in that it helps young children to develop skills for coping with dangerous situations. However, some stress, such as poverty, is intense and prolonged. Poverty not only reduces family material resources for quality nutrition, health care, and child care, it lessens family interpersonal resources such as time and energy for

Table 25.1 Intervention strategy based on developmental period and risk factor

<i>Risk</i>	<i>Developmental period</i>	<i>Intervention strategy</i>
	Prenatal	
Maternal substance use before and during pregnancy		Counseling through primary care and referral to treatment
Inadequate prenatal care		In-home nurse visits
	Infancy and toddlerhood	
Inappropriate expectations for children		Parenting class on child development
Harsh discipline		Parenting class on managing child behavior
Insecure attachment		Parenting class on developing a warm supportive relationship
	Preschool	
Aggressive behavior		Parent and teacher classes on setting limits and boundaries
Poor emotional control		Preschools that teach social emotional learning
Delayed school readiness		Preschool programs that highlight basic math and language concepts and home assignments for parent and child
	Elementary	
Behavioral problems in the classroom		Training teachers on classroom management
Academic problems		Academic tutoring
Child acting out at school		Developing collaborative relationships between school and home
Poor social skills		Placement in pro-social peer groups

parent–child interactions (Gershoff, Aber, and Raver, 2003). Importantly, chronic stress, stress that is ongoing such as a lingering illness or child abuse, can diminish the child’s ability to cope and can negatively affect health and development, even brain development and immune system functioning (Brown et al., 2009). Moreover, researchers have observed that some children who experience early stress, even prenatal stress, are more susceptible to later stressful life circumstances than others (Shonkoff et al., 2012; Raposa et al., 2013).

Research has shown that the more risks a child has or is exposed to, the more likely it is that he will experience a negative outcome, including drug abuse. This concept is sometimes referred to as accumulated risk. Evidence from a study on risk and protective factors among a sample of sixth- through twelfth-grade students in a

five-state survey indicates that there may be a threshold over which the ability to tolerate risk diminishes. Those youth with highest numbers of risk factors exhibited increased prevalence rates of problem behaviors, even when they had high levels of protective factors (Pollard, Hawkins, and Arthur, 1999).

Protective factors are qualities of children and their environments that promote successful coping and adapting to life situations and change. Thus, protective factors are not simply the absence of risk factors; rather protective factors may reduce or lessen the negative impact of risk factors (Garmezy, 1985; Rutter, 1985; Hawkins, Catalano, and Miller, 1992). It is generally the case that an accumulation of protective factors predicts positive outcomes. There is evidence that some protective factors are more powerful than others. Aside from factors that are associated with biological health such as normal birth weight and proper nutrition, the strongest protective factor for young children is secure attachment to at least one caregiver (Kim-Cohen, 2007). Individual characteristics of the child play a significant role in functioning; factors internal to the child that are especially protective include intelligence, easy temperament, and social, emotional, and cognitive competence (Masten, 2001, 2004). External factors, such as parenting that includes warmth, consistency, age-appropriate expectations, praise for accomplishments (e.g., using the toilet), opportunities for social interaction with peers, and consistent routines and rules are also important components in building a context for healthy child development (Masten, 2001, 2004). When providing an environment such as this does not come naturally to parents, prevention interventions can help them to build the knowledge and skills important for healthy child development and the prevention of subsequent problem behaviors such as drug abuse.

In addition to risk and protective factors that are internal (e.g., genetic or personality traits) or external to the child (e.g., arising from the child's context or environment), they may come from the interaction between internal and external influences (e.g., harsh parental response to "unacceptable" child behavior). Certain factors that powerfully influence a child's risk for later drug use and other problems can emerge and have their strongest effects during specific periods of development. For example having a difficult temperament in infancy may set the stage for the child having trouble with emotion and behavior regulation later. Poor emotion regulation can result in a number of problem behaviors, including uncontrolled aggression. This type of aggression during the preschool years can result in rejection by peers, punishment by teachers, and academic failure. Academic failure, especially in reading proficiency, early in elementary school is a strong risk factor for subsequent drug abuse.

All children have a mix of risk and protective factors. An important goal of prevention is to change the balance between risk and protection so that risk factors are reduced and the effects of protective factors outweigh the effects of risk factors. Moreover, even when children are progressing along the normal course of physical, cognitive, social, and emotional development and achieving age-appropriate milestones, improvements in their most important contexts can further their development. Thus, an important role of prevention interventions is to support not only a child's development but the development of skills and resources among those

who care for children in their most important primary contexts. Family and school are primary or proximal contexts for enhancing protective factors and reducing malleable risk factors. Interventions for early childhood develop knowledge, skills, and competencies, and strengthen existing protective factors, thereby reducing the effects of risk factors.

Interventions

Early childhood intervention targets

Prevention researchers have developed a large number of early childhood intervention programs to address specific risk factors for substance use and other problems that are more distal antecedents of drug abuse and to strengthen or increase protective factors. Table 25.2 lists these interventions by developmental period and provides information on the targeted population and context. The research studies that address these interventions provide ample evidence that they do reduce risk for initiation of drug use and progression from use to abuse.

Prior research on reciprocal relations between parent and child has noted that more positive behaviors on the part of one person over time can elicit more positive behaviors on the part of the other(s). The same is true of behavior that is changed as the result of intervention. Positively affecting a child's behavior through early intervention can improve the overall social environment (Fisher and Stoolmiller, 2008; Shaw et al., 2009). In other words, positive behavioral changes in children and the adults who interact with them can be mutually self-reinforcing. Thus, by positively influencing the child's family or school environment, child behavior can become more prosocial and, in turn, can elicit more positive interactions with caregivers and peers, thereby improving the overall social environment.

Characteristics of early childhood interventions

Specific characteristics of early childhood intervention programs are generally related to the developmental period of the child, the specific risk to be addressed, and the people with whom the child interacts in his or her proximal environments. Moreover, interventions are generally timed to coincide with the transitions between life course periods, because changes occurring within and around the child during these transitions present particular risk factors, as well as opportunities for enhancing protective factors.

The proximal environment of very early development is the family. Prevention interventions for the prenatal through infancy and toddlerhood periods generally focus on parents, specifically those parents with an identifiable risk, usually very young mothers at risk due to poverty. The goal is to foster a healthy pregnancy, healthy development of mothers and their children, and a healthy parent-child

Table 25.2 NIDA-funded early childhood interventions

<i>Programs</i>	<i>Target population</i>	<i>Context</i>
Infancy and toddlerhood		
Durham Connects (Dodge et al., 2013)	Mother, Father (when possible), Child	Family
Early Steps, Family Check Up (Shaw et al., 2006)	Mother, Child	Family
Family Spirit (Mullany et al., 2012)	Mother, Child	Family
Nurse Family Partnership (Olds, 2002)	Mother, Father (if present), Child	Family
Preschool		
Multidimensional Treatment Foster Care for Preschoolers (Fisher and Chamberlain, 2000)	Foster family, Child	Family, School
Transition to elementary school		
Caring School Community Program (Battistich et al., 1997)	School, Teacher, Family, Child	School, Family
Classroom-Centered Intervention (Kellam and Rebok, 1992)	Classroom, Child	School
Linking the Interests of Families and Teachers (Reid et al., 1999)	Classroom, Child, Family	School, Family
Raising Health Children (Catalano et al., 2003)	Family, Child, Classroom	School, Family
SAFE Children (Tolan, Gorman-Smith and Henry, 2004)	Family, Child	School, Family
Seattle Social Development Project (Hawkins et al., 1999)	School, Parent/Family, Child	School, Family
Early Risers "Skills for Success" Risk Prevention Program (August, Realmuto, Hektner, and Bloomquist, 2001)	Parent, Child	School, Family
Kids in Transition to School (Pears, Fisher, Heywood, and Bronz, 2007)	Child	School
Fast Track Trial for Conduct Problems (Conduct Problems Prevention Research Group, 2002)	Family, School, Class, Child	School, Family, Community
Incredible Years (Webster-Stratton, Reid, and Stoolmiller, 2008)	Family, Child, Classroom	School, Family
Positive Action (Flay, Allred, and Ordway, 2001)	Family, School, Class, Child	School
Schools and Homes in Partnership (Barrera et al., 2002)	Parent, Child	School, Family

relationship. Specific programs differ, but they commonly use nurses to screen mothers for drug use and supportive service needs, instruct them in good health care practices, and teach them how to connect to appropriate community services (Olds, 2002). Screenings may be delivered in the home, although this is not necessary. For example, one program screens for mothers in need of services through an existing supplemental nutrition program for at-risk families called Women, Infants, and Children (WIC) (Shaw et al., 2006). Those mothers who are screened into the program are visited, usually in the home, by a trained clinician. Together the mother and clinician decide what resources and services would be most helpful for the child and family. Services are then delivered by service providers in the usual venues. Programs typically focus on mother-child bonding, using consistent discipline, setting an example for prosocial behavior, and getting the child ready for preschool. Involvement of the father is often encouraged as well.

The family remains the most important proximal environment for children throughout childhood, but as a child grows and develops, other contexts outside the family become increasingly important as well. Programs during the preschool period address the well-being of both caregivers and children and the quality of their relationship, primarily through teaching prosocial parenting practices. Early disruptive behaviors of children are addressed to prevent escalation of these behaviors, promote better parent-child bonding, and help the child learn positive ways of relating to others (Webster-Stratton, Reid, and Stoolmiller, 2008). Preschool parenting programs can incorporate much of the same content as programs for younger age groups (for example, encouragement of prosocial child behavior and consistent, contingent, and non-abusive limit setting) but within very different contexts (such as school) and with children who have a wide variety of risk factors.

Unfortunately, the preschool period is a point in time when many children are at risk for or entering child protective placements (Child Welfare Information Gateway, 2013); these children are at increased risk for multiple problems early and later in life. Thus some interventions specifically target foster parents and children. For example, in one intervention, foster children receive individualized services in the home, a preschool setting, and a therapeutic child play group; and foster parents are given training to ensure that they are properly equipped to care for children who come to them with symptoms of severe stress and unusually difficult behavior challenges (Fisher and Chamberlain, 2000). Children who have experienced abuse or neglect by parents or caregivers are at greater risk for substance abuse and other mental, emotional, and behavioral problems than other children. Moreover, child maltreatment is associated with family-level risk factors, such as poor parenting skills, parental substance abuse and mental illness, and context-specific risks such as poverty (Institute of Medicine and National Research Council, 2009). Some children have endured ongoing maltreatment and/or neglect which may result in developmental delays.

The classroom is an important environment during the preschool and elementary school years, and interventions may focus on things such as improving teachers' skills and parent-teacher communication. School climate, resources, and policies are a few school-level factors that can influence intervention outcomes and can be manipulated through interventions to promote more positive outcomes. The classroom

environment is also very important to the academic and social success of the child. Changing classroom environments from those that react to problem behavior to those that encourage prosocial behavior can be achieved through supporting teacher training in constructive classroom management strategies. Some interventions address multiple contexts such as family and school, with emphasis on communication and collaboration between the two contexts, thereby making a consistent prevention effort across contexts to affect the target population(s) of the intervention (Reid et al., 1999; Flay and Allred, 2010). In fact, this is a primary strategy of interventions for children 3 years of age and older.

A significant target of programs aimed at the transition to elementary school is creating strong collaborative ties between families and schools. Evidence indicates that such links facilitate children's adjustment to school, academic achievement, prosocial peer friendships, and self-regulation. A notable characteristic of programs targeting this period of development is the use of interactive techniques such as role-play, guided play sessions, and small-group practice (Tobler, 2000).

A number of programs focus on improving communications between parents and teachers and on providing parents with information and strategies for helping their child cope with the structure and behavioral expectations of the classroom and how to facilitate positive peer interactions. Research shows that parents can help their children develop skills, competencies, and knowledge specific to the school transition and thereby promote a child's school success. The elementary school is also a focus of interventions to develop children's school competencies. At the heart of these programs are activities that build a repertoire of positive academic, self-management, and social skills. Programs may include tutoring, as academic failure in early elementary school is a predictor of ongoing academic problems and later school failure and drug use. Even if interventions target similar outcomes, programs may use different strategies. For example, social skills development can be approached through placing children with social or relational problems into groups with children who have good social skills (positive behavior teams), group social skills practice, playground and free-play monitoring, or rewarding of good behaviors (Ialongo et al., 1999).

Teachers are also a focus of interventions to educate them on good classroom management strategies. These interventions include training teachers to establish clear rules and rewards for compliance, how to teach interactively, and how to promote cooperative learning in small groups. This approach is designed to provide teachers with both the skills for managing child behavior and activities for teaching children to manage their own behaviors, thereby helping children develop emotion regulation.

Intervention outcomes

Some longitudinal studies of interventions have followed participants from early childhood into pre-adolescence, adolescence, or young adulthood (e.g., Hawkins et al., 2005; DeGarmo et al., 2009). For example, there are multiple datasets that examine results from the Nurse Family Partnership (NFP) program (Olds, 2002),

one of which is currently collecting data on children at age 17. Similarly, research on the Good Behavior Game (GBG) (Kellam and Rebok, 1992) intervention is currently following subjects to age 25. Both of these long-term follow-up studies have demonstrated positive effects on the targeted proximal outcomes as well as the more distal outcomes related to drug abuse initiation and progression. Proximal outcomes often include poor parenting and relational skills of caregivers and other internal and external risk factors of children.

For example, follow-up data on NFP with African American families showed positive effects on mothers' health during pregnancy as well as on subsequent pregnancies by child age 2, and fewer child injuries during the first two years after delivery (Kitzman et al., 1997). NFP children had significantly higher scores on intellectual functioning and vocabulary and fewer behavior problems than control children at age 6 (Olds et al., 2004). At age 12, findings indicated lower substance use (tobacco, alcohol, marijuana) and positive program effects on internalizing problems and, for low-resource children, positive effects on reading and math achievement (Kitzman et al., 2010). Follow-up data for GBG children at the end of first grade indicated that the program was effective in reducing aggressive behavior among first grade-children, and, for both boys and girls, the program had its greatest impact on children who began the school year with more aggressive ratings by teachers. GBG also had an impact on shy behavior as rated by teachers among both boys and girls (Dolan et al., 1993). An analysis of GBG data comparing intervention and control youth at age 19–21 years demonstrated that compared to control group youth, intervention youth had lower rates of lifetime drug abuse; this was especially true for boys who were described as high risk (aggressive) by their first- and second-grade teachers (Kellam et al., 2008).

In addition to proximal and distal antecedents and outcomes for substance abuse, other anticipated and unanticipated positive outcomes have been described in the early childhood intervention literature. These findings support the conclusion that early interventions can prevent a broad array of negative behaviors and promote a wide array of positive behaviors (Hawkins et al., 2008; Beets et al., 2009; Snyder et al., 2010), even behaviors not specifically targeted by the intervention (Hawkins et al., 1999; Hill et al., 2014; Kellam et al., 2014). In some cases, studies have shown that early childhood intervention even affected children's biological functioning (Fisher and Stoolmiller, 2008; Bruce et al., 2009), such as their sensitivity to stress. One measure used to assess level of child function in relation to stress is morning cortisol level. Cortisol is a naturally occurring hormone that is often called the stress hormone because it is secreted in high levels during stressful events. Under normal conditions this is helpful because it increases the body's survival responses. However, under conditions of chronic stress the body remains in a state of stress activation and cortisol levels do not follow normal patterns of daily fluctuation. The Multidimensional Treatment Foster Care for Preschoolers (MTFC-P) intervention study had children's caregivers collect monthly early morning and evening salivary cortisol samples on two consecutive days for 12 months and calculated diurnal cortisol activity. Three population samples were involved in this study: a community

control group of children living with two parents (CC), a regular foster care (RFC) control group, and the MTFC-P intervention group. The analysis of the three groups' morning and evening cortisol levels showed that the MTFC-P levels remained largely unchanged over the 12 months and their values were similar to those of the CC group; however, the RFC levels showed significant lowering of cortisol levels over time. This flattening of morning-to-evening cortisol activity is associated with symptoms of anxiety and emotion dysregulation, which may relate to hypothesized risks for subsequent cognitive and emotional problems (Fisher et al., 2007).

Additional unintended positive outcomes are found in other NIDA-funded early intervention studies. These long-term and cross-over or unintended positive effects occur in many facets of human functioning, including intrapersonal, familial, school and work, and service utilization. Findings presented in Table 25.3 illustrate that early childhood prevention interventions not only support children's development but also support the development of skills and resources of those who care for children in their most important primary contexts or environments (Tolan, Gorman-Smith, and Henry, 2004; Webster-Stratton, Reid, and Stoolmiller, 2008).

Cost and benefits of interventions

In addition to long-term effects and unintended positive effects of interventions, there is positive cost-benefit evidence for a number of interventions. Some of the existing research has not yet been able to follow participants to the point at which drug use, abuse, and addiction occur; for such programs, the assessment of cost-benefit cannot be assessed directly and must be estimated. Participants in other programs have been followed into adolescence and young adulthood and researchers have been able to directly measure outcomes such as drug involvement, educational attainment, criminality, mental health problems, and health-risking sexual behaviors. When this is the case, a direct comparison of those receiving an intervention versus those who have not received it can determine the cost-benefit of the program in preventing negative and promoting positive outcomes.

Cost-benefit research on early childhood prevention interventions has shown positive results. Some examples of cost-benefit data of interventions with long-term follow-up data are NFP (\$2.88 saved for each dollar invested) (Aos et al., 2004; Karoly, Kilburn, and Cannon, 2005), Seattle Social Development Project (SSDP) (\$3.14 saved for each dollar invested) (Aos et al., 2004; Miller and Hendrie, 2008), and the GBG (\$25.92 saved for each dollar invested) (Aos et al., 2004; Miller and Hendrie, 2008). For example, at age 12, findings for children in the NFP intervention group compared to the control group indicated that the intervention children had lower rates of substance abuse, delinquency, and involvement in the criminal justice system than the control group children (Kitzman et al., 2010). In the long-term follow-up of the SSDP, the intervention group children had less risky sexual behaviors and were more likely to graduate high school and be gainfully employed than the control group children at age 27 (Hawkins et al., 2008). Moreover,

Table 25.3 Early Childhood Interventions Have Long-term Effects on a Wide Array of Behaviors

<i>Outcomes Type</i>	<i>Increased or Reduced</i>
Intrapersonal	
	↓ Irritability as baby (Olds et al., 1986)
	↑ Child health (Olds et al., 1986; Olds et al., 1994)
	↑ Normalization of cortisol levels (Fisher et al., 2007)
	↑ Language development and cognitive function (Olds et al., 2002; Olds et al., 1994; Lunkenheimer et al., 2008)
	↑ Emotion regulation (Hawkins et al., 2005; Conduct Problem Prevention Research Group, 2002; Lunkenheimer et al., 2008; Reid et al., 1999; Reid et al., 2007)
	↑ Prosocial behavior (Catalano et al., 2003; Washburn et al., 2011)
	↑ Social competence (Conduct Problem Prevention Research Group, 2002; Webster-Stratton et al., 2008; August et al., 2002; Tolan et al., 2004)
	↓ Attention deficit hyperactivity disorder (ADHD) (Tolan et al., 2004)
	↓ Internalizing behaviors and disorders (depression, anxiety) (Hawkins et al., 2005; Shaw et al., 2009; Conduct Problem Prevention Research Group, 2002; Izzo et al., 2005; Dolan et al., 1993; Barrerra et al., 2002).
	↓ Early aggressive behavior (Stoolmiller et al., 2000; Tolan et al., 2004, 2009; August et al., 2001, 2003; Dolan et al., 1993; Kellam et al., 1994; Reid et al., 1999)
	↓ Externalizing behaviors and disorders (aggression, anti-social behavior and conduct problems) (Catalano et al., 2003; Reid et al., 2007; Webster-Stratton 2008; Reid et al., 1999; Kellam et al., 2008; Reid et al., 1999; Shaw et al., 2009; Kellam et al., 1994; Petras et al., 2008; Barrerra et al., 2002, Dishion et al., 2014).
	↓ Delinquent, violent and criminal behaviors (Hawkins et al., 1999; Beets et al., 2009)
	↓ Driving under the influence of alcohol (Haggerty et al., 2006)
	↓ Likelihood sold drugs (Hawkins, et al., 2005)
	↑ Age at first sexual experience (Lonczak et al., 2002)
	↓ Teen pregnancy (Lonczak et al., 2002)
	↓ Lifetime sexual partners (Hawkins et al., 1999; Olds et al., 1998; Beets et al., 2009)
	↓ Sexually Transmitted Infection (STI) (Lonczak et al., 2002)
	↓ Initiation tobacco, alcohol and/or other drug use/abuse (Beets et al., 2009; DeGarmo, et al., 2009; Storr et al., 2002; Wang et al., 2009; Hawkins et al., 1999; Furr-Holden et al., 2004)
	↓ Alcohol, tobacco, and other drug use (Brown et al., 2005; Kellam et al., 2008; Furr-Holden et al., 2004; Izzo et al., 2005; Beets et al., 2009; Hawkins et al., 1999)
	↓ Substance abuse disorders (Kellam et al., 2008)

Table 25.3 (Continued)

<i>Outcomes Type</i>	<i>Increased or Reduced</i>	
Family	↓ Suicidal ideation and attempts (Hawkins et al., 2005; Wilcox et al., 2008)	
	↓ Any psychiatric diagnosis (Kellam et al., 2008)	
	↓ Prenatal smoking (Olds et al., 1986)	
	↑ Maternal prenatal and perinatal care (Olds et al., 1986; 1994)	
	↓ Subsequent pregnancies (Olds et al., 1988; 1997)	
	↑ Maternal concern, support, nurturing, monitoring for child (Olds et al., 1986; Lunkenheimer et al., 2008; Reid et al., 1999; Tolan et al., 2004)	
	↑ Family problem solving (DeGarmo et al., 2009)	
	↑ Proactive family management (August et al., 2003)	
	↑ Parent involvement (Reid et al., 1999)	
	↓ Child accidents and poisonings (Olds et al., 1986; 1994)	
	↓ Child abuse and neglect (Olds et al., 1986; 1994; 1997; Eckenrode et al., 2000)	
	↓ Domestic violence (Olds et al., 2004)	
	↓ Parental/caregiver stress (August et al., 2003; Fisher and Stoolmiller, 2008)	
	↓ Maternal depression (Shaw et al., 2009)	
	↓ Maternal role impairment due to substance use (Olds et al., 1997; 2010)	
	↑ Maternal graduation rates (Olds, et al., 1988)	
	↑ Maternal work history (Olds et al., 1988)	
	School/Work	↓ Teachers less harsh/critical (Webster-Stratton et al., 2008)
		↑ Emphasis on social-emotional teaching (Webster-Stratton et al., 2008)
↑ Teacher report increase social skills (Reid et al., 1999)		
↑ Academic achievement (reading and math) (Snyder et al., 2010; Catalano, et al., 2003; Tolan et al., 2004, 2009; Gunn et al., 2005; August et al., 2001; Dolan et al., 1993; Hawkins et al., 2005)		
↑ Cooperative, team learning style (O'Donnell et al., 1995)		
↑ School behavior (August 2001)		
↑ School competence, socialization to school context (August et al., 2001; August et al., 2003)		
↑ Commitment to school, school bonding (Catalano et al., 2003; Hawkins et al., 1999)		
↓ Disruptive behavior (August et al., 2003)		

(Continued)

Table 25.3 (Continued)

<i>Outcomes Type</i>	<i>Increased or Reduced</i>
	↓ School absenteeism (Snyder et al., 2010)
	↑ High school completion (Kellam et al., 2008; Hawkins et al., 2005)
	↑ College attendance (Hawkins et al., 2005)
	↑ Employment (Hawkins et al., 2005)
	↑ Time at present job (Hawkins et al., 2005;
Service Use	↑ Awareness of community services (Olds et al., 1986)
	↓ Social service use (Temporary Assistance to Needy Families; Aid to Families with Dependent Children; other) (Olds et al. 1988; 1997; 2010); decreased social service use (overall and school) (Poduska et al., 2008)
	↓ Special education (Poduska et al., 2008)
	↓ Child Protective Services (Eckenrode et al., 2000)
	↓ Mental health and drug abuse services (Izzo et al., 2005; Poduska et al., 2008)
	↓ Criminal Justice involvement (Olds et al., 1998; Eddy et al. 2003; Poduska et al., 2008)

at ages 19–21, males in the GBG intervention group who were more aggressive in first grade had higher rates of high school graduation, lower rates of alcohol and drug abuse and dependence, and lower rates of antisocial personality disorder than males in the control condition (Kellam et al., 2008). Other programs with long-term follow-up data do not show such dramatic benefits. However, these examples point out the extent to which a well-conceptualized and implemented intervention for very young children can benefit society, not to mention that averted problems can improve quality of life for children and families.

Interventions

For the past three decades, the National Institute on Drug Abuse has supported research on theory-based prevention interventions for early childhood. To date, research on almost 20 interventions has been supported. The major strategy of these programs is the promotion of protective factors and resources in the lives of children and those people closest to them.

Through theory, observation, and behavioral study, scientists have determined that select facets of human behavior can be changed over time. Specifically, the effects of malleable risk factors can be reduced and protective factors and resources

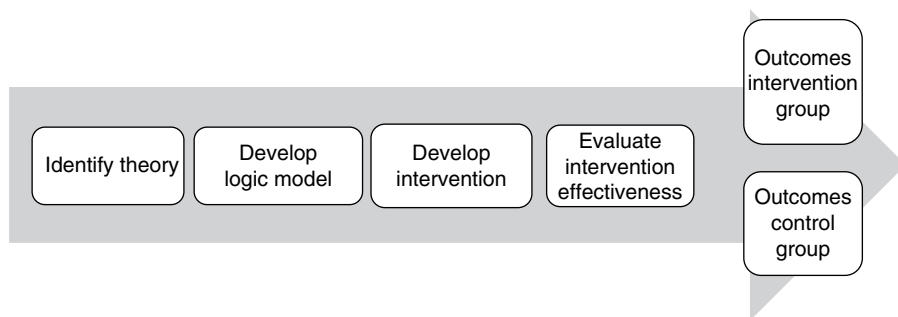


Figure 25.3 Importance of theory: From conceptualization to outcomes

can be enhanced, developed, or accessed. An important avenue for accomplishing this is through prevention interventions that develop knowledge, skills, and competencies in the targeted individual(s). This provides the basic rationale for the conception and design of prevention intervention programs.

Intervention design begins with theories; theories of child development and psychological theories of how humans live and function in the environment as well as theories of cognition and behavior (Figure 25.3). Theories help us to think about how patterns of behaviors develop, what motivates individuals to behave in specific ways, and what risk and protective factors should be examined. The influence of theory can be traced throughout the processes of conceptualizing, developing, and testing an intervention. Theory informs thinking about what internal and contextual factors and processes may be modifiable; this information is then used in the development of a logic model. Logic models graphically explain how changes in malleable risk and protective factors and behaviors will take place over time to produce positive outcomes.

Prevention interventions developed using scientific methods are in large part based on theory and logic model conceptualization. In addition, they are subjected to testing, usually in a randomized controlled trial (RCT) or other rigorous research design. An RCT study randomly assigns participants to intervention and control conditions. The advantage of this method and other rigorous research designs is that they allow one to draw conclusions about the effectiveness of an intervention without being concerned that the outcomes are related to some other population or contextual factor that was not taken into account.

Through the evaluation and comparison of measures of current status among intervention and control group participants at multiple time points before, during and after the intervention, changes in behaviors, attitudes, intentions, skills, and knowledge can be determined to see if the expected positive results are achieved. Prevention interventions that use this scientific method develop an evidence base that supports or does not support effectiveness. Those that demonstrate meaningful positive outcomes on the targeted skills, competencies, and knowledge specified in the theory and logic model can be called evidence-based interventions (EBIs).

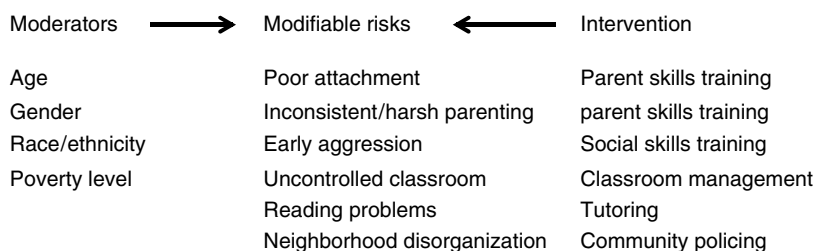


Figure 25.4 How interventions work

Figure 25.4 illustrates several key features that help in understanding how interventions work. *Moderators* are aspects of humans that influence the design and outcomes of interventions but cannot be changed, such as age, sex, and race. *Modifiable risk factors* are the primary targets of the intervention or the knowledge, behaviors, attitudes, intentions, skills, and competencies the intervention attempts to change. *Intervention* often includes activities designed to promote: skill development in specific areas such as parenting; environmental change strategies such as modifying classroom management style to reduce the aggressive behaviors of some children; provision of services to help in the development of specific competencies such as academic skills through tutoring; and community-level change strategies such as changing access to alcohol or tobacco by minors through policy enforcement.

Although vulnerability to the risk factors associated with problems such as drug use can occur throughout the life course, they tend to peak during critical life transitions. Thus transitions are prime opportunities for preventive interventions to introduce skills, knowledge, and competencies specific to that transition. Transitions may be biological, such as birth or puberty, or they may be normative such as entering school for the first time or moving from preschool to elementary school. How a child responds and adapts to transition events is influenced by his or her cognitive, emotional, and social development at that point in time as well as past history of family relationships and the surrounding world. Other transitions, such as parental divorce or military deployment of a parent, are not predictably linked to a child's development, but these events or circumstances still require the child to adapt successfully (e.g., to new people or new contexts).

For that reason, interventions specific to life course transitions are designed and tested for a particular stage of development with a focus on fostering optimal development as the child or caregiver encounters new internal and external capacities, social relationships, and context. Expectations for performance associated with new phases of life can trigger anxiety and self-doubt. At the time these transitions are occurring, providing experiences with and practice in negotiating new situations can foster confidence and competence, thereby maximizing the potential for optimal development.

Adaptation of interventions

One question that is sometimes asked is whether childhood prevention interventions need to be modified for implementation with populations or contexts that differ from the original research. Unfortunately, this question has not been adequately addressed through research. Minor changes to original program materials to make the people, contexts, and examples more relevant to a specific group have been found to have little effect on intervention outcomes. Generally speaking, significant changes to the intervention structure and content are not recommended, as there is limited evidence on how these types of changes will affect outcomes. When a target population or context differs markedly from those targeted in available science-based interventions, a new intervention tailored to meet that population's specific needs (e.g., cultural or contextual needs) may need to be designed. An example of one such program, Family Spirit, intervenes with very young, poor mothers on American Indian reservations (Barlow et al., 2006).

Other adaptations that may need to be made are providing program support services to participants to make an intervention more accessible to them. Services may include transportation, care for other children in the family, snacks or meals, and compressed programming (e.g., offering fewer but longer sessions). Accommodations can lessen the burden associated with attending a program, help to build social support among members of the intervention group, and help retain and keep participants involved.

Conclusion

This chapter draws on the child development literature and decades of NIDA-funded research on theory-based early childhood interventions to explain why intervening early in development is important for the prevention of drug abuse. There are many influences on the life course or trajectory of a child from the prenatal period through the early years of elementary school. These influences range from the intrapersonal to the familial, academic, and broader social contexts and can operate as challenges and opportunities, or risk and protective factors in the lives of children and those who have the important role of caring for them throughout childhood. Interventions for these life periods are developmentally appropriate and address normative risk and protective factors with content that supports the promotion of knowledge, skills, and competencies needed to successfully negotiate early childhood life transitions and optimize development.

Early childhood interventions have demonstrated important effects on the amelioration of risk factors and the enhancement of protective factors associated with the initiation and progression of drug use. Close examination of Table 25.3 reveals the breadth and depth of effects from these complex early childhood interventions and leads to six important concepts that support the conclusion that intervening in

early childhood can alter the life course trajectory of children in positive directions. First, the presented findings are a combination of both reduction in risk factors and outcomes and enhancement of protective factors and outcomes. Moreover, because the interventions occurred early in life they include both proximal (closer to implementation) and distal (later in development) outcomes. Proximal outcomes represent risk and protective factors for later outcomes. For example, there are findings across multiple studies indicating that emotion regulation is improved through intervention. Emotion regulation is both a proximal target of early intervention and a predictor of risk for subsequent negative outcomes and behavior problems, including substance use. Thus, early childhood interventions can both increase protective factors and reduce risk factors.

Also reflected by findings in Table 25.3 is the concept that effects of early interventions can be seen many years into the future. Long-term follow-up findings from several interventions provide illustrations of this concept. For example, a supplemental issue (Kellam, Reid, and Balster, 2008) comparing GBG control and intervention group youth at age 17–19 demonstrates that those who received the intervention had lower rates of externalizing behaviors, alcohol and other drug use, criminal justice involvement, psychiatric disorder diagnoses, suicidal ideation, mental health and drug abuse service utilization, special education placement, and higher rates of high school completion. These same findings point out a third concept: intervening early in childhood can have effects on a wide array of behaviors, even behaviors not specifically targeted by the intervention. Drug abuse prevention research generally focuses on one or more related outcomes, such as alcohol, tobacco, and other drug use initiation, progression to regular use, and risk factors known to predict these outcomes. However, many problem behaviors have common antecedents. Early interventions are generally not planned as long-term studies and focus on the more proximal risk and protective factors. For this reason it is not surprising that a body of research on early intervention is able to demonstrate effects on the prevention of a wide array of associated problem behaviors and other positive outcomes.

Another concept that emerges from this body of research is that prevention interventions can positively affect children's biological functioning. The evidence presented here is limited to the findings of one relatively short-term study and one long-term follow-up. Other NIDA-supported research on older age groups provides more findings for this concept. Technology that was not available when many of these early interventions were first launched makes the investigation of biological effects possible and more common. However, while the theories on which interventions were based did not specifically hypothesize the internal biological mechanism of change, they did provide careful observations of human behaviors that foreshadowed our ability to use technology to substantiate biological correlates of behavior change.

The last two concepts have to do with the social context of the child. First, that intervention should target the proximal environments and contexts of the child. Developmental theories suggest that this is the case and findings here support that

suggestion by demonstrating the flow of results through context (e.g., family, school, peers) to the child. Although this chapter does not go into detail about mediated effects of interventions, some findings demonstrate how sequences of effects in the proximal environment predict positive outcomes. For example, findings from the Early Steps intervention when the child was 3 years of age (Shaw et al., 2009) illustrated indirect effect of maternal depressive symptoms on the child's internalizing and externalizing problem behaviors. In other words, the modest but significant intervention reductions in maternal depression reduced child problem behaviors. Moreover, findings from this and other intervention research studies demonstrate that positively affecting a child's behavior through early intervention can elicit positive behaviors in other people. When these reciprocal effects occur, the overall social climate of the family, classroom, or school improves. These six concepts not only support the overall conclusion that interventions for early childhood can change the life course trajectory in a positive manner, they suggest the possible explanatory processes. In addition, they suggest new directions for intervention research with young children as well as older children and adolescents.

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Dealing with Drug Users

Treatment

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According to the 2013 National Household Survey on Drug Use and Health (NSDUH), 9.4% of Americans age 12 and older reported using an illicit drug during the past month; 8.2% reported substance dependence or abuse in the past year; and it was estimated that on average about 7,800 individuals each day used illicit drugs for the first time (SAMHSA 2014). In 2011, a national survey estimated that nearly 2.5 million US emergency department visits were related to the abuse and/or misuse of an illicit drug; over 1.3 million of those visits involved an illicit drug (SAMHSA 2013). These numbers illustrate the unhealthy relationship between the population and substance abuse. In reaction to the impact drug abuse has on society, professionals in a range of fields are working toward developing more effective methods to reduce the substance abuse. Although, in past decades, psychologists did not consider drug addiction a diagnosable disease, a growing recognition of the neurological, biological, and psychological effects of addiction led to changing its classification in the *Diagnostic and Statistical Manual of Mental Disorders* (DSM). In the newest version of the DSM, DSM-5, substance use disorder, rather than abuse and/or dependence, is defined in order to better align with the symptoms experienced by patients. This updated label and symptoms of the condition do not consider abuse a precursor to a more severe stage of addiction, nor does it consider dependence a disorder as the human body naturally becomes dependent on substances.

The change in the DSM-5 is a reflection of the changing view of drug addiction over time, from a moral problem of the individual to a recognition of the complex interaction of individual behavior and physiology. This change in how drug addiction is viewed has led to changes in how addiction is treated, and hopefully to better outcomes for those who suffer from it.

This chapter provides a brief overview of drug treatment. First, a broad definition is provided and some of the general frameworks utilized in the field are described. Then a number of the most commonly used approaches are examined in more detail, followed by a discussion of drug treatment's place in the criminal justice system. Lastly, some international comparisons are made, concluding with a comment on the future of drug treatment.

What is Drug Treatment?

While it may appear obvious what drug treatment is – treating drug addiction – there is disagreement among professionals as to what approach is most appropriate. It is thus best to begin with the goals or purpose of drug treatment. There are three main purposes of drug treatment. First, successful completion of drug treatment is the permanent abstention from or decrease in substance use. The secondary goal of drug treatment involves the enhancement of physical and psychological abilities that were damaged during the individual's period of substance use. Finally, treatment should result in the establishment of a sober lifestyle, which often requires disconnection from former social ties and places that may be tainted by drug-related activity (Levinthal 2008:404). Generally, drug treatment is recommended when a person's lifestyle and/or behavior is negatively impacted by their substance use.

Drug treatment can thus be viewed as any active intervention aimed at achieving the three goals outlined above. It is useful to differentiate between treatment and recovery. Treatment is a focused intervention that usually involves professional counselors, a curriculum, and has a temporal duration. Treatment ends when one completes the program. Recovery, on the other hand, refers to a post-treatment lifestyle that often involves continuing support and a change in how the individual views themselves and their addiction. Often people overcoming addiction refer to their status as in recovery; that is, they will say "I'm in recovery," or "As a recovering person..." This reflects a lifelong view of addiction in which relapse into use is possible and the recovering person is aware of this and is adjusting their lifestyle in light of this fact. Overcoming substance use is often a difficult task requiring multiple attempts and a variety of techniques. Because of the individualized nature of drug addiction and the different orientation of practitioners in the field, there is a vast range of drug treatment techniques. Before reviewing some of the most common approaches, the next section frames the overall process of treatment.

The Process

Because drug addiction deeply impacts various aspects of an individual's life, the process of a drug addict abstaining from substance use is complex and difficult. One way of framing a drug user's journey to overcoming addiction is the transtheoretical or stages of change model, which consists of five separate stages: pre-contemplation,

contemplation, preparation, action and maintenance (Levinthal 2008:404–405). Because every substance user is different, it is impossible to predict an individual's progression from one stage to the other. In fact, some people may spend an extended amount of time in one stage while others easily transcend to the next point. Additionally, users may slide back stages, or relapse only to start over as they battle to overcome their disease.

The first stage, pre-contemplation, involves an individual wishing to change but lacking the serious intention to change in the future and/or the understanding of the extent of his/her problem. This is a period that many substance users experience as they may not have a realistic plan or handle on their usage problem, but desire in some way to make a change. The second stage, contemplation, occurs when an individual has become fully aware that a substance problem exists, although definite commitment to act toward overcoming the issue has not yet been made. Once an individual seriously considers taking action, they have entered the stage of preparation in which they formulate a means of changing their behavior. This can involve seeking out information on professional treatment services, locating or attending self-help groups, and working with family and friends to develop a plan. The fourth stage is defined as the action period, in which an individual actually alters their behavior and environment in order to overcome their problem. This alteration must be successfully followed by the maintenance phase, which includes the development of lifestyle skills and strategies on how to avoid relapsing into previous drug-using behavior (Levinthal 2008:404–405). It is important to note that there is a significant difference between an individual who relapses into drug-use versus a drug-use lapse. A single using incident of any substance, drugs and/or alcohol, is considered a slip or a lapse. However, a full setback or relapse is associated with an individual returning to a consistent pattern of substance use. During an individual's journey to personal treatment and full recovery, instances of lapses and/or relapses are the norm and not the exception. The next sections will focus on the action and maintenance stages of recovery, where formal drug treatment becomes the key turning point in a successful recovery process.

Assessment

When an individual takes action toward recovery they must first be properly assessed for their unique needs in order insure they receive the appropriate treatment to be successful in recovery. While there are a number of different tools used to assess individuals when they enter treatment, they all essentially focus on the type of substance involved, the level of severity of the addiction, strengths and support, and potential areas of weakness. Many will also attempt to assess where an individual is in the stages of change framework. During assessment, dual diagnosis is common. Many individuals suffer from multiple illnesses aside from a single substance problem. For instance, although a user may be dependent on cocaine, their using incidents may often include alcohol. Additionally, many drug users also have a

psychiatric illness such as depression or mood disorders. In order to maximize treatment outcomes, drug treatment specialists must consider how multiple disorders impact one another. Assessment highlights the unique and individualized nature of addiction, resulting in numerous types of drug treatment. The next section focuses on several types of treatment in order to capture this range in substance abuse services.

Types of Treatment

Detoxification

Prior to engaging in any form of treatment, an individual needs to be dissociated from the immediate effects of the problem drug. The process by which the human body naturally eliminates drugs of abuse from its systems paired with physical and psychological withdrawal symptoms is known as detoxification, or “detox” (Clowes 2012). These symptoms can vary widely depending on the substance of withdrawal. Symptoms can include nausea, aches, migraines, chills, depression, and thoughts of suicide (Levinthal 2008). In addition, certain populations, such as pregnant women, face additional health problems when detoxing. Precautions in clinical settings are recommended to avoid serious health risks if individuals attempt to go through detox alone. As a result, many programs begin with a period of detox, or require some form of certification that the person is medically free of withdrawal effects. Once assessed and detoxed, an individual may engage in a number of different treatment approaches, described below.

Outpatient psychotherapy and behavioral approaches

Most drug treatment consists of what is known as outpatient treatment, in which an individual attends regular group and/or individual counseling sessions, but remains in the community. Supporting individuals through their recovery process with psychotherapy and behavioral methods has been shown to be successful in overcoming substance dependence. Counseling is a psychological form of treatment in which a trained professional provides assistance and guidance in resolving problems, including personal, social, and psychological difficulties (Daley 2012). In regards to treating drug disorders and the psychological illnesses that often occur with substance use, counseling is used in several ways during drug treatment. For instance, an individual can voluntarily enter drug counseling, be court mandated to attend, or attend as a component of an overarching recovery program. Individual and group counseling sessions may have different goals and span longer/shorter lengths of time depending on that goal. Group sessions could consist of family members or individuals who struggle with the same substance abuse problem. In any case, a skilled professional or counselor serves as the point of knowledge, guidance, and support in

the session. It is important that counselors have helpful attitudes that equip them with the ability to be empathic, sensitive, nonjudgmental, and encouraging when counseling an individual trying to overcome drug abuse. In addition, counselors who lead group therapy sessions must be able to keep individuals focused and on topic. They must also understand group/family dynamics well enough so that each individual is engaged and benefiting from the therapeutic experience.

Outpatient treatment programs utilize a variety of interrelated approaches. Three brief examples will help demonstrate the diverse forms of support available to substance users: cognitive-behavioral therapy, relapse prevention, and motivational incentives. Cognitive-behavioral therapy (CBT) is the most common form of psychological therapy. Based on social learning theory, CBT considers that drug use is learned through social interaction, just like speaking, walking, or any other behavior. CBT assumes that individuals abuse substances because doing so serves a function in their lives. Therefore, CBT therapists seek to understand the function, cues, and stimuli of addictive behavior and provide abusers with coping mechanisms to maintain abstinence in high-risk situations (Tejero-Pociello 2012). Research has found that CBT is effective in the treatment of substance abuse. However, the most important factor in determining the impact of a treatment program is retention of individuals.

Often combined with CBT, the relapse prevention model focuses on learning from incidents of relapse as a major part of the recovery process. As discussed earlier, relapse is thought of as a norm rather than an exception. Therefore, under the relapse prevention model, when an individual slips backwards into substance-using behavior, the model attempts to identify what triggered the event and develop coping skills that will avoid repetition of relapse in the future. Ultimately, the goal of relapse prevention is to develop major lifestyle modifications that allow the individual to remain drug-free.

Lastly, voucher-based treatment programs reflect the social learning concept of operant conditioning in which individuals learn by obtaining rewards. This type of program has been found to be effective in the short-term treatment of cocaine addiction. Individuals receive vouchers to purchase items at local stores/restaurants in exchange for maintaining a sober lifestyle; this increases internal motivation to stop using drugs. Often, all three approaches are used in one program.

Treatment centers

While not a method or approach to drug treatment, most treatment is delivered in treatment centers, where multiple programs and approaches are housed under one roof. Most individuals seeking treatment receive it in a center. Treatment centers, sometimes referred to as clinics, serve substance users in their journey toward recovery in a variety of ways. By staffing the facility with trained professionals from diverse fields, including medical and psychiatric doctors, nurses, counselors, psychotherapists, and social workers, treatment centers are capable of handling

a range of needs that clients may have. Additionally, some of the counseling staff may consist of former drug users who are able to relate their personal experiences to individuals in the recovery process. While each treatment center may specialize in certain areas of treatment or a particular type of substance abuse, every facility establishes methods that enable them to offer specialized treatment (Back 2012). Clinics can be either outpatient or inpatient, referring to the residence of the client/patient. In an inpatient facility, a substance abuser temporarily establishes residence at the center in order to receive structured and regimented treatment. Within a day, individuals can attend multimodality programs which combine different treatment methods into one comprehensive recovery plan. Due to the engulfing nature of addiction, individuals benefit more if methodologies are extensive and account for a wide range of needs. These needs include assistance in undergoing detox, methadone maintenance, medication management, and individual/group therapy, depending on the target population of the facility. Likewise, abusers can benefit from the support and services that treatment centers provide while residing outside of the facility on outpatient status. Outpatient clinics are less restrictive than their counterparts and provide a continuum of care that offers variety for the abuser as well. Intensive outpatient clients attend sessions at the treatment center at a minimum of three times each week. For many individuals, however, contact with the facility is much less frequent. It is noteworthy that an individual can be partially hospitalized within a facility, which is an intensive method of treatment consisting of a full day of multidisciplinary services led by professionals. This form of treatment within clinics is even more intense than inpatient services because it is paired with medical treatment of some kind.

Anonymous groups

One of the most well-known anonymous substance treatment groups is Alcoholics Anonymous, also known as AA. Founded in 1935, AA was founded by two successful professionals struggling with sobriety who realized the importance of mutual help in overcoming alcohol addiction. Alcoholics Anonymous hold group meetings in which individuals who share the disease of alcoholism gather and discuss their experiences, sometimes guided by topics from AA literature. Individuals are referred to by their first names only, in order to foster anonymity within the group. Additionally, because AA groups are self-supporting, donation baskets are passed around where contributions can be made at the participant's discretion. AA is built around several core principles and ideas. First, the cure to addiction does not exist. Instead, sobriety must be maintained every moment of every day; relapse could occur at any time. Attendance at AA meetings is recommended throughout one's lifetime to secure continued support and accountability from fellow group members and maintain a lifestyle of recovery. Additionally, AA members acknowledge that only a higher power can restore true balance to one's life. The Twelve Steps of Alcoholics Anonymous have become synonymous with the process of sobriety. An individual is encouraged to work through each of the 12 steps in order to sustain

sobriety in their lives. The belief in a higher power is intertwined throughout the steps and a higher being is referenced in half of the traditions. Although some have criticized AA for its spiritual core, thousands of individuals have been positively impacted through the program. In fact, 90% of alcoholics stay sober for the next year if they complete formal treatment, attend weekly aftercare, and go to AA meetings regularly (Connors and Tonigan 2012). There are branches of AA that specifically cater to the needs of those indirectly impacted by alcohol abuse. Al-Anon is an anonymous group that requires members to be a relative or a friend of a former/present drinker. This group recognizes that alcoholism is a family illness and that the journey toward recovery can be greatly aided by altering the drinking attitudes of those in the alcoholic's support system. An extension of Al-Anon is Alateen, which targets youth who are connected to and impacted by alcoholism.

The span of AA has grown beyond alcohol with the development of various treatment groups, including Cocaine Anonymous (CA), Crystal Meth Anonymous (CMA), Marijuana Anonymous (MA), and Narcotics Anonymous (NA). These groups adopt many of the same principles and traditions of AA, although they focus on different substances of abuse. For instance, Narcotics Anonymous adapted the first step of the 12 to state "We admitted we were powerless over our addiction" rather than the original AA first step, "We admitted we were powerless over alcohol" (Thompson 2012). This change accommodates individuals in NA who can be addicted to a range and/or combination of drugs while acknowledging that addiction is a disease. Rather than members stating their own individualized first steps, this general statement also creates common ground between drug users.

The nature of AA/NA approaches makes controlled experiments on effectiveness difficult, but they have the advantages of being free and readily available, including an increasing online presence through the internet. Many formal treatment programs include 12-step elements and recommend that clients attend some form of self-help program upon completion of treatment in order to bolster a lifestyle of recovery.

Pharmacotherapy

Pharmacology is the study of the interactions between the body and chemicals. Because substance abuse involves the dependence of the human body on a chemical, pharmacology can explain important aspects of addiction and recovery. In order to successfully withdraw from chemical dependence, it is important to fully understand the effects drugs have on the body. Research in this area has led to a number of medications that block the effects of particular substances, or provide the user with relief from withdrawal symptoms without using an intoxicating substance. The process of prescribing and using these medications is called pharmacotherapy. The United States Food and Drug Administration and other regulatory agencies must approve the use of medications in substance addiction. While there is no approved pharmacotherapy for every substance, such as cocaine, several have been approved by the US FDA. Pharmacological methods are used in the treatment of opioid addiction, alcoholic treatment, and tobacco cessation. Developed in New York City by Vincent Dole,

a metabolic disorders specialist, and Marie Nyswander, a psychiatrist focused on narcotics dependence, methadone maintenance was the first widely used form of pharmacotherapy. It involves the oral administration of a synthetic form of heroin that suppresses withdrawal symptoms and allows the individual to function normally (Levinthal 2008:107). More recent advances in opioid medications involve the use of buprenorphine and Naltrexone. Buprenorphine functions much like methadone, except it has a “ceiling” effect, which is a dosage level at which it stops working. Methadone has no ceiling effect, which increases its potential for abuse because it can be an intoxicating substance at higher dosages. The difference is important. Due to its potential for abuse, methadone is distributed at a clinic. Buprenorphine, possessing a much lower abuse potential, can be prescribed by a physician and taken home, making it less of a burden for the patient. Naltrexone is different from the other two in that it blocks the effect of opioids on the brain, meaning an individual using Naltrexone will not feel the effects of opioids should they take them. While useful for long-term maintenance, Naltrexone is only useful once a person has been completely detoxed, as it does not prevent withdrawal symptoms. The three medications have proven useful tools for physicians treating opioid addiction.

While much attention is given to opioid medications, there are a number of approved medicines for the treatment of alcoholism. Naltrexone, also used in opioid treatment, is used in the same way for treating alcoholism – by blocking the drug’s effect on the brain. Other drugs, such as Acamprosate, alleviate the unpleasant and potentially dangerous effects of alcohol detox. Disulfiram, unlike the others, essentially makes the person sick if they drink while taking it. As with opioid medications, those used in the treatment of alcoholism must be tailored to the individual’s needs by a prescribing physician, but are useful tools in some cases.

Although often not considered a drug, one of the most common addictions to overcome is nicotine resulting from smoking tobacco. There are a variety of approaches to smoking cessation, including pharmacotherapy. Nicotine replacement therapies (or NRT) are utilized by individuals combating nicotine addiction by relieving the withdrawal symptoms of the drug. NRTs are available in a variety of forms, including nicotine gum and the transdermal patch, both of which are available over the counter (Levinthal 2008:107). Other medications used in smoking cessation include bupropion and varenicline, which impact tobacco’s effect on the brain and require a prescription.

Medicine-assisted treatments are generally used in combination with a behavioral intervention. Still, they are controversial in some sectors of the treatment community, most prominently in criminal justice settings.

Therapeutic communities

Therapeutic communities (TC) are intensive drug treatment programs in which participants struggling with a range of addictions are housed together in a residential situation. This treatment program has been the cause of a considerable amount

of controversy as participants run the programs themselves, helping lead treatment groups and holding other members accountable for behavior. The goals of a TC are to foster behavioral change and acquisition of social skills as a result of peer influence, self and mutual help, and shared responsibility. These fundamental principles were spawned from those established by Alcoholics Anonymous. Typically, an individual's stay within a TC can last between 6 and 12 months (Latessa, Listwan, and Koetzle 2014:187). Every experience and event that occurs within the therapeutic community is considered a learning opportunity in which individuals can be provided insight into their behavior. Therefore, the community environment is the teacher. Although TCs are largely run by participants, trained staff help guide and monitor the community members' interactions. Individuals who participate in TCs have often been dual diagnosed with substance and/or mental health disorders. In addition, individuals admitted frequently have had multiple encounters with the criminal justice system. In fact, TCs are in place within corrections facilities such as prisons, jails, and halfway houses, although in these environments individuals remain within the community long-term from 12 to 24 months. (Drug treatment and its role within the criminal justice system will be discussed in more detail below.) An analysis of TCs within the state of Delaware found that participants in prison-based and halfway-house TC programs in a continuum of care did better than those individuals who were under the supervision of the department of correction but participated in a non-TC treatment program or solely prison-based program in regards to the likelihood of being arrested as far out as 15 years after completing the program. It should be noted that although TCs have been proven successful in studies, there are many programs that label themselves TCs but do not fully adapt the requirements of the program. Elements of a TC include: community separateness, community environment, community activities, staff roles and functions, peers as role models, structured days, work as therapy and education, phase format, TC concepts, peer encounter groups, awareness training, emotional growth training, planned duration of treatment, and continuity care. Many modern TCs have dropped elements of the original models and added others as counselors and program directors see fit. These "modified" TCs often fail, therefore leaving a negative imprint on the reputation of TCs in general.

In sum, a wide range of drug treatment approaches are available to individuals on the journey toward recovery. There is a general consensus that the most effective methodology in combating drug addiction is psychotherapeutic and behavioral approaches (Latessa, Listwan, and Koetzle 2014:96). Overall, the importance of accurate assessment, appropriate treatment, and support are outlined in each type of approach, although the details of each required element may differ. Assessment may be the most crucial component of successful substance treatment as individuals often have co-occurring substance and/or mental health problems (Latessa, Listwan, and Koetzle 2014:118). Without a comprehensive diagnosis, the complex nature of the disease cannot be treated properly. In addition, it is stressed that staff take the individualized nature of addiction into account in order to fully tackle a client's needs.

Drug Treatment and the Criminal Justice System

The criminal justice system in the United States has been greatly impacted by the swelling number of individuals with substance use disorders. Although the drug that has been most clearly linked to violence is alcohol, users who are in need of funds to continue their drug supply often do so through illegitimate means. Therefore, the criminal justice system prosecutes thousands of individuals each year for drug-related crimes. According to the Bureau of Justice Statistics' website (BJS 2014) in 2004, 17% of state prisoners and 18% of federal inmates reported committing crimes in order to obtain money for drugs. In 2002, about a quarter of property crimes committed by offenders housed in local jails were drug related. Additionally, in 2007 victims of violent crimes believed that their attacker was under the influence of drugs and/or alcohol, according to the National Crime Victimization Survey. Substance dependence is extremely high among the inmate population. In 2006, it was reported that nearly three-quarters of state prisoners who had a mental health problem and half of those without mental disorders were dependent on or abused drugs and/or alcohol. These statistics illustrate the urgency and necessity of the criminal justice system to take powerful counter-measures against drug addiction.

Although the need for drug treatment within the criminal justice system may be obvious to some, there has been some difficulty in effectively establishing treatment due to the contrast between punishment and rehabilitation. When an individual is convicted of a crime, despite the rationale behind the offense, many believe that the offender should be punished. Punishment is thought to achieve three goals: (1) teach the offender a lesson, (2) act as a symbolic gesture of making the victim whole, and (3) signify to other potential offenders that violation of the law will not be tolerated within society. However, others believe that the interaction that offenders have with the criminal justice system can be used to reform them from deviants into law-abiding citizens. This is particularly the case in regards to individuals suffering from substance abuse disorders who commit crimes. If the criminal justice system merely punishes them for their offenses without addressing the root issue of drug abuse, there is little hope for rehabilitation and non-recidivism. It is also noteworthy that in the DSM-4, one of the symptoms of substance abuse/dependence was interaction with the criminal justice system. In the updated DSM-5, however, this symptom was removed as it is believed that law enforcement exposure is not evenly distributed across the population (Drug Policy Alliance 2014). In other words, certain groups of people may receive more negative attention from the criminal justice system than others. This section will briefly discuss drug treatment programs within the criminal justice system, including specific instances of success and failure. Here it is important to note the distinction between corrections programs and activities. Programs within confinement facilities are geared toward reducing recidivism. Activities, on the other hand, are services that assist in the management and supervision of inmates by keeping them busy while confined (Latessa, Listwan, and Koetzle 2014:185). Drug treatment services within corrections are therefore

programs, as they attempt to challenge the behaviors and mindsets of inmates in order to prevent the recurrence of previous actions as they relate to drug abuse.

Almost three-quarters of correctional facilities offer substance abuse treatment programs in some form, including therapeutic communities, counseling, anonymous groups, drug courts, and so on (Latessa, Listwan, and Koetzle 2014:186). Beginning in the 1980s, there are now more than 2,800 drug courts operating within the United States (Drug Policy Alliance 2014). Drug courts are a form of specialized court where individuals who are addicted to drugs are processed with their condition in mind, rather than attending a traditional court. In a drug court, offenders are sentenced to drug treatment programs and monitored closely in order to ensure their cooperation and observe their progress. Successful drug courts consist of the judges, prosecutors, defense attorneys, law enforcement, probation/parole officers, social workers, treatment providers, and so on who work together in order to provide a comprehensive plan of treatment for the offender. Individuals who attend drug court do so frequently and judges talk one-on-one with offenders, establishing a relationship and accountability on a level that is unavailable in the traditional court system. In fact, research on drug courts has found that judges are key in creating a supportive and successful drug court. The most effective drug court judges are minimally appointed to the court for two years, which ensures stability in the processes and procedures of the court (Latessa, Listwan, and Koetzle 2014:130). While some research studies have found that drug courts reduce the likelihood of recidivism by 8–13%, others find that most drug courts do not reduce imprisonment, improve societal safety, save money, nor truly help individuals facing drug addictions (Latessa, Listwan, and Koetzle 2014:127). Because drug treatment professionals are aware that relapse is oftentimes a part of the recovery process, the protocol to incarcerate individuals who “slip” back into using seems illogical and unjust. This procedure often leads to individuals who relapse while in the drug court program having to serve more time behind bars than if they had not been assigned to drug court in the first place. In addition, statistics show that people of color are less likely to be admitted to a drug court program or successfully graduate from drug court programs and more likely to receive a punitive sanction upon violating drug court rules. Therefore, the racial disparities present within drug law enforcement and sentencing, such as the crack/cocaine disparity, may only be further accentuated via drug court. Furthermore, in order to participate in drug court, individuals must plead guilty to their charges, hoping that upon their successful completion of the program their conviction will be expunged from their record. However, oftentimes records are not expunged and individuals still have to face the stigma associated with being drug-charged upon completion of the program. Ultimately, critics suggest that rather than focusing on individuals who have been charged with using and/or possessing drugs, the intent of drug court should be on those individuals who are changed with serious offenses in which their actions were drug motivated in hopes of better outcomes for all involved.

Another form of drug treatment in corrections found to be successful is residential substance abuse treatment (RSAT) programs. In 2007, Mitchell and colleagues

found that individuals that went through the RSAT program were 8% less likely than those who did not complete the program to recidivate. RSAT programs are administered by the Bureau of Justice Assistance agency, which is designed to assist regions in establishing incarceration-based drug treatment programs as well as aftercare and post-release treatment programs. Components in RSAT programs include group counseling and they are often considered therapeutic communities. Overall, substance abuse treatment approaches that teach new behavioral and thought processes in order to acquire new, drug-free life skills have been found to be the most successful in treating offenders with substance abuse disorders, which is also true with populations outside of the criminal justice system.

International Drug Treatment Efforts

Internationally, major efforts have been made to combat drug addiction, although the methodology for nations varies. It is important to note that due to the availability of drugs and the diverse cultural practices of societies worldwide, the nature of drug addiction within a population can differ greatly by nation. For example, illicit opiate and cocaine crops are not grown on a major scale in Western Europe (IDPC 2014). This would explain the region's moderately serious epidemic of heroin addiction, the issue not becoming chronic. Canada has faced even fewer problems with cocaine and heroin than Europe and the United States, which may seem surprising due to Canada's proximity to the United States. In contrast, Western Europe is the world's biggest market for cannabis resin (also known as hashish) and grows the substance in significant amounts. Therefore, just as for individuals the path toward recovery is unique and complex, so is the establishment and implementation of effective policies and procedures at the national level. This section will briefly discuss some of the approaches various countries have taken in their attempt to combat drug addiction, allowing us to better understand the complicated and diverse nature of international drug treatment.

A nation's response to their drug problem can also be a point of contrast to other countries. The United States has responded to the drug problem by considering it a criminal issue to be strictly dealt with by the criminal justice system. This may be because the United States is one of the nations that have been most adversely affected by illicit drugs. Due to legislation that protects rights, including the right to keep and bear arms, it is believed that drug-related offenses are more likely to lead to violence in the United States versus other countries where weapons are less available, such as Canada and Western Europe. In these nations, the levels of violence are extremely low, in contrast to the United States. In fact, the national sentiment to drug-use is so severe that it has become commonplace for US employers, including the federal government, to drug-test their employees. There are no European nations that encourage drug testing as a part of employment. In accordance with the punishment model, the United States is the most punitive nation in its reaction to drug-related incidents. Focused on disrupting the distribution and consumption of illicit drugs,

US law enforcement places a heavy emphasis on incarceration in order to prevent users from accessing drugs, deter potential offenders within the community, and punish individuals for their offenses. Within Europe, Sweden is the most punitive nation, as short-term treatment is mandated to individuals for the mere suspicion of drug use. This compulsory form of “punishment” can be instituted without a criminal conviction or arrest (Felbab-Brown 2008). Nations such as Italy, the Netherlands, the United Kingdom, Spain, and Switzerland choose to tackle the health consequences of drug addiction, considering it a medical issue rather than a criminal one. In Britain, major leeway is given to doctors in prescribing and dispensing medication to drug addicts, as drug treatment is considered a medical concern. Doctors, having the primary responsibility for rehabilitation, depend on pharmacotherapy as a method of treatment, which lies in stark contrast to the United States. Within the United States various regulations are in place on medical practitioners and the distribution of medicine. In fact, medical marijuana has only recently been approved of within the legislature of some US states. Marijuana in the Netherlands is one of the most infamous examples of the decriminalization model, in which no criminal penalties are imposed on individuals who possess the substance in small amounts. Coffee shops in the region are known to sell marijuana in small amounts to patrons as a method of managing and profiting from the drug. Certain states within the United States have passed legislation allowing the sale of marijuana for non-medicinal purposes in small amounts in similar establishments. While the punishment model is still largely the sentiment of US legislation, legal changes such as these may signal the beginning of shifts of the nation’s perspective. The de-penalization model involves the removal of sanctions (at minimum criminal but also possibly administrative) for the possession of drugs intended for personal consumption. This standard is somewhat used in Britain where police can choose to warn individuals guilty of simple possession of marijuana, rather than processing them through the system. This type of discretion can also be found in nations that consider drug addiction a moral issue rather than a medical or criminal one. German judges may choose not to punish first-time drug offenders at all. And in the case of second-time offenders, judges have the option to choose between sentencing an offender to prison or a treatment program. To a further extent Italy and Spain allow for the de-penalization of all drugs as long as the amount is small and intended for personal use. The range in acceptable responses within the punishment, decriminalization, and de-penalization models speak further to the complexity of effective global drug treatment.

Isralowitz, Afifi, and Rawson succeed in emphasizing how cultural differences impact the way drug problems are handled within nations in their 2002 work, *Drug Problems*. In the volume, a culmination of works emphasizes the importance of cultural fixtures in understanding and improving national responses to drug addiction (Isralowitz, Afifi, and Rawson 2002)

The role of religion within drug treatment should be considered, as some Arab mental health patients do not consider themselves responsible for their problems. Instead, full responsibility is placed on their doctor to heal them. As discussed

earlier, there is a large overlap between the drug-using and mental health populaces. Because Arab patients may hold their "healer" in high regard, possibly seeing them in parental positions, the therapeutic value of practitioners may be higher in this culture in comparison to other nations. This should be considered not only on the macro (here national) level, but also at the micro (individual) level by practitioners outside of Arabic nations but who service Arab patients. Another study focusing on Israel made suggestions for improvement for drug treatment services while considering the unique characteristics of the nation. Suggestions include giving more attention to: expanding agnostic maintenance programs such as methadone, promoting public acceptance and awareness of such agnostic programs, increasing government funding for drug treatment services, and improving service integration across Israeli ministries in order to provide more efficient and effective treatment. Furthermore, research completed using individuals of one cultural population may still ring true for persons around the globe. One Israeli study found that ex-users remained drug-free during the initial period of abstinence if they believed they were being supported socially. However, those who successfully remained abstinent for the long term had realized a measure of life satisfaction, a sense of meaning/purpose and self-actualization. Understanding that while external support may be initially important, internal belief ultimately assists in long-term rehabilitations can assist recovery specialists worldwide.

Besides domestic law enforcement (discussed alongside the punishment model above), there are three alternate types of approaches to the drug problem at the national level: harm reduction, prevention, and treatment. Many nations focused on the harm reduction of drug addiction consider the spread of AIDS as a top priority (Reuter, Falco, and MacCoun 1993). In order to combat this, it has become common for nations to adopt some form of needle exchange program in which users can acquire sterile needles and safely dispose of sullied ones. Supporters of needle exchange emphasize the importance of minimizing risk to individuals and the community at large. Zones of Tolerance are designated areas in which addicts can inject drugs under the supervision of medical workers in order to minimize the spread of disease and risk of drug overdose. One of the most infamous examples of a tolerance zone is Platzspitz Park, located in Zurich, Switzerland near a railway station. The park remained opened for nearly five years before closing down due to attracting a large population of users to the area as well as an increase in crimes in the area surrounding the park. During this time, however, medical emergencies were handled efficiently and Switzerland reported a decline in HIV rates as needle exchange and other harm-reduction services were made easily available to users in that area. Additionally, countries such as Italy have made needles so accessible that they are available for free via vending machines. Needle exchange is not globally accepted, however, as critics believe that making instruments for drug use available to users condones their behavior. For instance, the United States made its stance clear in 2007 when the nation's 2.8 billion dollar donation to the global fund against AIDS was stipulated so that the money would not support needle/syringe exchanges. Although extremely strict on not

“condoning” drug-use by supporting needle exchange, the United States is the global leader in program development for prevention. Schools within the United States have implemented programs such as DARE, led by police officers, to educate youth on the risks of drugs/alcohol. Additionally, major marketing campaigns further informing the American public of the health and social perils of addiction are commonplace. The campaign against tobacco in the United States has been extremely successful, with smoking rates lower than any other nation in the world. It is thought that if nations fully invest in prevention measures, citizens will be informed of the risk and be less likely to engage in drug-use. Successful prevention measures in one nation can be a promising point of reference for improving the education of the global community. The treatment approach aims to decrease the demand for illicit drugs by reducing the number of individuals addicted. As discussed in detail above, there is a range of treatment approaches which countries support at varying measures depending on their cultural beliefs.

Ultimately, every nation partakes in some form of the several approaches: domestic law enforcement, harm reduction, prevention, and treatment. Each country’s application of each approach varies in degrees in accordance to the nature of their particular drug addiction problem. It would be most beneficial for nations to continue to learn from one another in order to successfully tend to their unique needs and improve drug treatment at the global level. Communication and accurate information are vital in completing this objective. While there are some nations that have structured establishments for the collection of statistical information that are crucial in comparing the drug treatment processes of nations, others have yet to acquire such systems. Modeled after the US National Household Survey, the European Commission has struggled to establish an observatory which would be purposed with the regular collection of surveys regarding a range of societal issues, including drug use and treatment. However, due to political obstacles this goal has yet to be realized. In other less-developed nations, an observatory or national survey may be less feasible due to resources or cultural protocols that might impede individuals from sharing private information, and so on.

International Drug Treatment and the Criminal Justice System

Despite the restricting and punitive nature of incarceration, there are some fundamental rights that are protected under international law. Prisoners are to retain all civil rights that are not removed explicitly by necessary implication and law. Additionally, incarcerated individuals have a right to quality physical and mental health services in order to assure them the highest attainable level of health. These statutes are listed in several international codes, including the Constitution of the World Health Organization, the Universal Declaration of Human Rights, and the International Covenant on Social, Economic and Cultural Rights (Jurgens 2000). In fact, there are at least two cases in which prisoners have successfully taken legal action against their custodial systems for violating these rules by failing to provide

harm-reduction measures, such as sterile needles and condoms, which resulted in the contraction of HIV. This section will briefly discuss how prisons across the globe are responding to their social and legal responsibility of providing drug-related medical treatment to inmates.

As stated above, within international correction facilities the prevention of the spread of HIV infection and the reduction of drug-related harms to the incarcerated population have become a major concern. Research has found that granting inmates access to harm-reduction measures such as condoms, bleach, sterile syringes, and so on led to a reduction in the risk of harms caused by drugs. In addition, these controversial measures are often supported by inmates, corrections staff, prison officials and the general public. Preliminary success in prison harm-reduction measures have led to a substantial growth in establishing similar procedures in prisons worldwide, including needle exchange programs (Nelles et al. 2000). Switzerland, for instance, has distributed sterile equipment for injecting since 1993 in some prisons. Critics of instituting such methods within prison may cite that the system is: (1) condoning behavior that led to incarceration in the first place; (2) permitting actions that are illegal within confinement facilities; (3) placing correctional staff at risk by permitting inmates access to potentially dangerous materials such as bleach and syringes. However, proponents argue that programs that have found success in the general community must be established within prisons as inmates often suffer from drug-related problems in need of recovery resources. These resources include approaches such as pharmacotherapy and needle exchange, as they have been the most successful measures for recovery from certain substances. Methadone maintenance treatment is slowly gaining favor among prisons across the globe and has received backing from both national and international organizations. Additionally, prescribing heroin to inmates has also been deemed feasible in two preliminary trials in Swiss prisons. The successful distribution of heroin maintenance involves a daily structured program with an underlying purpose of caring for inmates. Similar projects have also begun in Germany. Providing replacement substances to incarcerated individuals ultimately is thought to reduce the spread of HIV and serves as an alternate to sterile syringe provision. While certain countries have found success in these relatively new and controversial harm-reduction measures within prisons. Germany and other countries have not taken such broad steps toward introducing successful "outside" programs on the "inside. For instance, the Dutch prison system firmly supports abstinence of its prisoners. For that reason, while education on the risk of drug use is majorly supported, means to reduce risk are not provided. This continues, although Dutch policy recognizes the effectiveness of combining education and practice in their drug treatment efforts for the general population. Nevertheless, choosing to maximize availability of facilities to the high-risk population within some prisons, rather than merely using facilities for punishment, shows how public attitudes and the goals of imprisonment globally are being challenged. Prisons in Africa face different drug abuse problems that mainly revolve around cannabis use. The difficulty with cannabis use in prisons is that it fuels psychotic symptoms, which are common among inmates in Africa. Harm-reduction

measures taken include training correctional staff and providing adequate staffing in order to provide informed supervision to inmates. The uniqueness of African prisons further speaks to the complexity of creating effective global drug treatment, particularly within prison populations.

International law and global perspectives seem to be slowly changing toward ensuring the rights and health of inmates. This directly relates to the establishment of harm-reduction and drug treatment methods within correctional facilities. However, it is unrealistic to hold prisons to expectations that general society have yet failed to meet. At the national and international levels, combating addiction and reducing the harm of illicit drugs within prisons has been proven to be a complicated problem that requires a variety of resources and informed professionals. In addition, not providing proven successful approaches to harm reduction and recovery denies individuals rights to which they are entitled, and are not denied to them due to their legal circumstances.

Future Considerations

The Council of the European Union set up overarching frameworks and policies in addressing the drug problem on an international level that will remain in effect from 2013 to 2020 (Official Journal of the European Union 2012). Their considerations are ones that can be applied worldwide. Therefore, this section will briefly discuss the conclusions of the European Union in international terms. First, all nations must recognize the poly-substance use of drug addiction and the increasing need to improve the quality, coverage, and variety of drug demand and harm-reduction services. Drug use therefore must include a component that handles co-morbidity, psychiatric issues, and social/medical risks and harms. In order to facilitate the most successful outcome in resolving the drug problem, nations must promote and facilitate coherence and cooperation between health, social, and justice policies and systems, including continuity and high-quality care of the incarcerated, disabled, and other special populations. Nations must ensure that effective and diverse drug-recovery resources are available and accessible to a range of dependent drug users who have the desire to begin their path to recovery. Professionals must develop and expand integrated and comprehensive models of care, including social reintegration and recovery for individuals suffering from addictions. By communicating with each other, nations around the world can improve their approaches to drug treatment and addiction, which will lead to a healthier global community.

Summary

- There are three main purposes of drug treatment. First, successful completion of drug treatment involves the permanent abstention from and/or decrease in substance use. The secondary goal of drug treatment involves the enhancement

of physical and psychological abilities that were damaged during the individual's period of substance use. Finally, substance treatment should result in the establishment of a sober lifestyle, which often requires disconnection from former social ties and places that may be tainted by drug-related activity.

- Due to the unique and varied nature of substance use, various types of drug treatment programs have been developed. These types include: cold turkey, psychotherapy and behavioral approaches, anonymous groups, pharmacotherapy, therapeutic communities, and treatment centers.
- Drug treatment services within corrections are programs that attempt to challenge the behaviors and mindsets of inmates in order to prevent the recurrence of previous actions as they relate to drug abuse.
- It is important to note that due to the availability of drugs and the diverse cultural practices of societies worldwide, the nature of drug addiction within a population can differ greatly by nation.
- At the national and international levels, combating addiction and reducing the harm of illicit drugs within prisons has been proven to be a complicated problem that requires a variety of resources and informed professionals. In addition, not providing proven successful approaches to harm reduction and recovery denies individuals rights to which they are entitled, and are not denied to them due to their legal circumstances.
- By communicating with each other, nations around the world can improve their approaches to drug treatment and addiction, which will lead to a healthier global community.

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Drug Policy in the United States

A Dynamic Multilevel Experimental Environment

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Introduction

Drug¹ policy in the United States (US) has been influenced by many forces and exists (and is debated) at many levels. While policies are informed by scientific research on the harmful consequences of drug use/abuse, complex social forces also impact policy development and application. Economics, tax revenue, public health concerns, libertarian traditions, free market entrepreneurship, ethnocentrism, puritan religious ethics, and even imperial policy have been a major part of drug policy debate. This complex array of issues and policy levels often make it very difficult to get a coherent sense of what US drug policy is. In attempt to sort out the complexity, we use ecological systems theory (EST) to present how drug policy in the United States has been developed and applied at macro federal and state levels, mezzo community levels, and micro collective advocacy and individual levels. We hope this approach will help readers understand the differences and the dynamic interactions between these levels as drug policy develops and is applied.

It is our purpose to provide a brief overview of these issues and to summarize the current directions of the policy debate. We will examine:

- I. The drug policy continuum;
- II. A brief history of US drug policy;
- III. EST as a framework for examining current drug policy;
- IV. How drug policy develops and is applied in the US through the lens of EST;
- V. A theoretical case study of two juveniles negotiating the marijuana policy environment in the United States; and
- VI. EST and the future of drug policy in the United States.

The Drug Policy Continuum

Before going further, we wish to provide readers with a framework for understanding the conceptual positions involved in debates over drug policy. These positions can be viewed as existing along a continuum, from prohibition to legalization/regulation. Between the two endpoints lie decriminalization, medicalization, and public health/harm reduction.

- **Prohibition.** Prohibition policies prohibit individuals from using, possessing, selling, or manufacturing a specified substance for any reason (medical or recreational). Supporters argue that the individual and social harms associated with drug use and abuse (crime, violence, and economic costs) require strong deterrence to prevent drug availability, use, and harmful consequences. Thus, severe mandated punishment for drug offenses is often part of prohibitionist policies. This position is currently used at both federal and state levels for some substances (e.g., heroin) and at the federal level and only some states for other substances (e.g., marijuana).
- **Decriminalization.** This position maintains that, although a policy of prohibition remains in place for behaviors such as selling or manufacturing a specified drug, individual use and/or possession is either overlooked or subject only to civil penalties such as fines. According to the NORML State Guide to Marijuana Penalties (NORML 2014), some type of decriminalization policy was in place for marijuana in 16 states² as of January 2014.
- **Legalization/regulation.** This policy position not only removes penalties for use of specified substances but also provides a regulated framework for production, distribution, and possession. Such frameworks can range from free markets with no restrictions for any users, to adult-only free markets, to licensing for adult users (MacCoun and Reuter 2001). Virtually all legalization proponents reject giving adolescents unrestricted drug access. Supporters argue that the approach (a) enables regulations to ensure substance quality, potency, and access; (b) removes violence associated with illegal distribution; and (c) generates tax revenue for revenue-starved states. Legalization/regulation is the current policy position at federal and state levels for alcohol and tobacco. As of January 2014, legalization/regulation was also the position in two states³ for marijuana (NORML 2014).

The policy positions discussed to this point focus on access. However, implicit in the level of access is a corresponding understanding of what drives and affects the underlying phenomena of drug use itself. Prohibition (and decriminalization to some degree) views drug use as deviant behavior based on rational choice that is best dealt with by the criminal justice system through punishment. Legalization/regulation views drug use as a form of consumer behavior driven by market forces and governmental regulation. However, these opposing positions can, at times, incorporate public health/harm reduction and/or medicalization components.

- **Public health/harm reduction.** This position sees drug use and abuse as a public health issue best dealt with through education, prevention, and treatment. Education is emphasized that accurately describes both the consequences of drug use/abuse and the least harmful methods of use. Prevention efforts focus on the underlying individual- and system-level causes of use. Quality treatment-on-demand recognizes that drug addiction is a chronic reoccurring disease (treatment instead of incarceration is most often proposed for nonviolent offenders and those not involved in selling or drug trafficking). Public health/harm reduction policies enable programs such as needle exchange and drug courts. Currently, drug courts are active in all 50 states and the District of Colombia (NADCP 2014a).
- **Medicalization.** Medicalization proponents see drug use and abuse as physical conditions that cannot be addressed by either criminal justice systems or market forces, and argue that drug abuse and addiction are diseases best addressed by the medical profession through treatment. Such treatment can be either in the form of maintenance (for example, heroin users participating in methadone maintenance programs) or adversarial and interference approaches (where individuals take a substance that either suppresses or reacts against a drug's effects). Proponents call for greater physician access to currently illicit drugs such as marijuana in order to treat a variety of human mental and physical problems. Twenty states⁴ and the District of Colombia had medical marijuana policies as of January 2014 (NORML 2014).

A Bit of History

It is important to remember that psychoactive and powerful pain-relieving substances have been a part of the human experience since the origin of our species. Many of today's commonly used/abused drugs are derived from indigenous plants that human populations have used in their daily lives for millennia, including cannabis, opium poppies, and tobacco. Some archaeologists have argued that the move from a hunter-gather life to a settled life was at least partly due to a desire to have a stable source of alcohol (McGovern 2009). One of the first alcohol policy statements (regulating selling and consuming alcohol) occurs in the Code of Hammurabi, written in approximately 1780 BCE (Room 2004). While each generation tends to view the issues of intoxicating drugs, behavior, societal norms, and policy debates as unique to itself, history indicates that human beings have always dealt with these issues.

Over the centuries, science has enabled humans to increase the impact of substance use. We learned to distill alcohol as well as increase alcohol content by manipulating fermentation. We learned to cross-breed plants to make their psychoactive components more powerful, and then learned how to extract those psychoactive components in order to obtain highly potent derivatives. The emergence of global trading networks in the sixteenth century allowed universal distribution of substances that previously had been limited to more localized use, such as coca leaves (Inciardi 2007).

The beginning years of the United States were a time of relatively open *laissez-faire* drug markets. By the mid-eighteenth century, the United States had developed an extensive and well-organized patent medicine industry, and powerful drugs were well integrated into the US economy. As the nineteenth century drew to a close, the Sears catalogue sold opium, barbiturates, and cocaine, as well as the syringes needed to ingest these substances (Sears, Roebuck and Co. 1897). Opium was touted as a magic elixir able to relieve almost any pain or health issue (Inciardi 2007), and marketed as useful for both “children and adults” (Sears, Roebuck and Co. 1897). The original coffee break may have been a coca break: Peruvian Wine of Coca was advertised to make users work harder and longer in difficult conditions (Sears, Roebuck and Co. 1897). As David Musto (1999) observed, Americans had integrated powerful drugs into the pain relief and energy needs of daily life.

As the twentieth century dawned, major social reform movements were initiated, focusing on ending child labor, ensuring food safety, improving overall labor conditions, and gaining women’s suffrage (Young 1989). Included among these major reform movements was an attack on the pharmaceutical industry for its widespread marketing of dangerous, addictive drugs (Adams 1905). An article appeared in the *New York Times* on March 12, 1911, claiming that the United States had the highest per-capita consumption of opium in the world (Marshall 1911). Occurring simultaneously with these major social reforms (but unrelated to them) was a growing societal fear of immigrants and minority groups. Immigrants from Ireland and Southern Europe were seen as violent, dangerous drunks destroying the fabric of the United States. African Americans, Mexicans, and Chinese were portrayed as marijuana- and opium-using offenders who were corrupting the youth and attacking young women (Inciardi 2007). Changes in US drug policy emerged within and were a part of this contextual background of both social reform and societal reactions to the perceived menace of minority and immigrant groups.

In 1914, the federal Harrison Narcotics Tax Act was signed.⁵ The Harrison Act targeted opium and coca not by banning these substances nationally, but by enacting national regulations for manufacturing and distribution. The Harrison Act was the beginning of federal drug scheduling and involvement in the drug economy. Individuals or entities were not allowed to produce, import, manufacture, compound, deal in, dispense, sell, or distribute opium or coca without (a) registering with the government and (b) paying a specified tax. In short, the Harrison Act ended the legal nonmedical use of narcotics. Alcohol was next: by January 16, 1919, the Eighteenth Amendment to the US Constitution prohibiting alcohol had been ratified by 36 states and went into force one year later (Killian and Costello 1996).⁶ As legal access to narcotics decreased, concerns rose over a substance used by some members of the growing Mexican immigrant population: marijuana (Bonnie and Whitebread 1970). State action came first. The National Conference of Commissioners on Uniform State Laws added marijuana to opium and coca under the 1934 Uniform Narcotic Drug Act. Four years later – by 1937 – the Uniform Narcotic Drug Act had been adopted by 35 states (although by that time, every state had enacted some form of marijuana legislation) (Bonnie and Whitebread 1970). The federal government

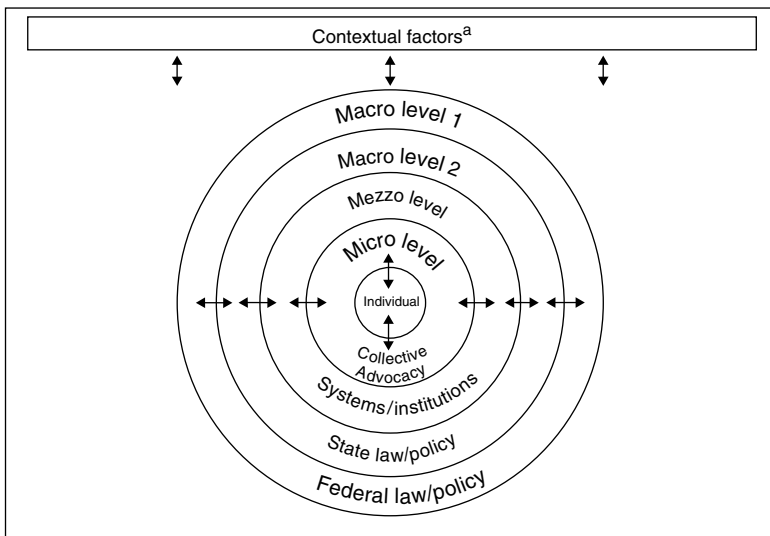
joined the growing state movement through the Marihuana Tax Act of 1937, wherein a tax was levied on anyone commercially dealing, prescribing, or possessing marijuana. While the tax itself was minimal (approximately \$1), the comparatively draconian penalty provisions (five years' imprisonment and/or \$2,000 fine) and complex reporting and inspection requirements effectively prohibited both medical and recreational marijuana use (Solomon 2014).

Prohibitionist drug policy was generally accepted by the public and the media until the cultural revolution of the 1960s. The revolution questioned many established social norms, including support of the military, appropriate language for public discourse, sexual behaviors, and drug use. It was an era of expanding consciousness, and drug use was seen as a part of the expansion (Marwick 2000). In many ways, today's drug policy debate began in the 1960s; it continues today through scientific research, academic and policy thinking, legislative debates, voter initiatives, and constitutional amendments (McBride, Terry, and Inciardi 1999; VanderWaal et al. 2006).

When US drug policy is discussed nationally and internationally, the discussion often focuses on federal policy. However, federal policy often emerges within the context of state actions. States have played a major role in developing their own drug policies throughout US history. This was indicated above when the Uniform Narcotic Drug Act (a state-level effort) preceded the federal Marihuana Tax Act. States actively contribute to the development of federal drug policy; at times, state policy actually contradicts federal policy. A comprehensive study by Chriqui and her colleagues (2002) clearly documented differences between state and federal drug scheduling, definitions, and penalties. States have served as laboratories for policy addressing a variety of social issues. If economic, educational, or health policies appear to work in specific states, the US legislative and executive branch may well use this information to develop national policy (Boeckelman 1992). In many ways, there is no such thing as "US drug policy." Rather, there is a wide variety of federal, state, and local policies with differing schedules and associated penalties. These complications are a key part of why EST provides a useful framework for understanding how the various components of drug policy in the United States interact.

Ecological Systems Theory

The above sections illustrate that drug policy in the United States simultaneously occupies multiple positions across the drug policy continuum. Policies vary based on which drug, which level of government (federal, state, local), and even between states and local governments for the same substance. How does one make sense of this complex system? We propose using EST. The theory calls attention to federal, state, and local levels of policy; the recursive nature of policy development and application; the active role of systems/institutions in policy implementation; and the significant variation in drug policy that currently exists across and within levels. Modern EST was developed by Urie Bronfenbrenner (1979) as a way to understand the nested family, school, economic, and political systems affecting human development. At its



a Contextual factors include a broad range of measures including sociodemographic characteristics of the nation, state, system/institution, advocacy group or individual; funding resources; political priorities outside the drug area, etc.

Figure 27.1 Ecological systems map of drug policy in the United States

core, EST recognizes that there is a complex, recursive interplay between social system components, from the individual to the community, state, and federal levels. Of key importance is that interactions between levels are reciprocal.

Figure 27.1 provides an EST mapping of the drug policy environment in the United States. We propose that, in general, four levels are needed to accurately depict and understand the system's complexity. The macro level is comprised of two connected yet separate policy levels: federal law/policy (macro level 1) and state law/policy (macro level 2). The mezzo level includes systems and institutions such as public health, treatment, and criminal justice. The micro level includes collective advocacy (such as organizing ballot initiatives and referenda), as well as the individual attitudes, beliefs, and behaviors of those abstaining from drug use, drug users, substance policy offenders, substance abuse treatment participants, and so on. Each level – including the individual – exerts a reciprocal influence within and across other levels, either directly or indirectly. All levels are affected by contextual factors such as sociodemographic characteristics, funding resources, political priorities, and so on.

Drug policy in the United States through an EST framework

Macro level 1: Federal law and policy

The US Congress implemented the current federal framework governing the manufacture, importation, possession, and distribution of controlled substances through the Controlled Substances Act (CSA) in 1970.⁷ The CSA created the current

Schedules (I–V) used to classify drugs based on perceived potential for abuse, accepted medical use in the United States, and potential for dependence. Schedule I substances have high potential for abuse and no currently accepted medical use in the United States (examples include GHB, cannabis, heroin, LSD, MDMA). Schedule II substances have high potential for abuse, but do have a currently accepted medical use in the United States (examples include cocaine and opium). The Schedule level determines the sanctions for violations of the CSA; however, significant sanction variation can exist between substances in the same Schedule level. For example, cocaine is a Schedule II substance; until the year 2010, the federal penalty structure for crack cocaine possession/distribution was 100 times more severe than that for similar quantities of powder cocaine. In 2010, the Fair Sentencing Act (Pub L. 111-220) reduced but did not eliminate the discrepancy, which remains at 18:1.

Macro level 2: State law and policy

It is essential to remember that the governmental structure of the United States is that of a democratic federal constitutional republic. That is, the power to govern is shared between national, state, and local governments. Under the Tenth Amendment, “unless an area of the law has been expressly or impliedly pre-empted by a federal statute, the responsibility for rapid and innovative responses to social, economic, and health problems falls to the states and their local governments” (O’Connor, Chriqui, and McBride 2006, 1180). The nation’s governmental structure means that the process of drug policy in the United States differs considerably from that in most other countries. States have historically been very active in experimenting with new drug policy approaches and penalty structures – some of which subsequently have been adopted by the federal government for national application (Belenko 2000; Musto 1999). As has been noted, by the time the federal 1937 Marihuana Tax Act was enacted, all 50 states had already adopted laws prohibiting the nonmedical use of marijuana (Belenko 2000).

State drug policy variance has the possibility of significant impact in citizen’s daily lives. In 2002, only 6% of all adult felony convictions in the United States occurred in federal court, while 94% occurred in state courts; drug offenders made up the largest percentage of state court felony convictions (Durose and Langan 2004). The reality is that the majority of arrests for illicit drug possession, sales, and manufacturing are made by local or state police (Ostrom and Kauder 1999). In order for local and/or state police officers to make an arrest for a specific act, that act must have been made illegal in state – not federal – law. State illicit drug arrests are usually for violations involving small amounts, while violations prosecuted at the federal level are more often related to trafficking and conspiracy (Glaeser, Kessler, and Piehl 1998). Significant interstate variance exists in illicit drug policies, and there are meaningful differences between state and federal policy.

State scheduling and penalties. Reviews of selected statutory drug laws in the 50 states as well as the District of Columbia (Chriqui et al. 2002) have shown that

while state legislatures generally reflect the federal CSA in their state's policies, there are notable differences. For example, in contrast to the previously noted federal penalty discrepancies between powder and crack cocaine, virtually no states had equivalent differences for these substances (Chriqui et al. 2002). Strong variation in penalties also exists between states. A number of states had no specified maximum penalties for illicit drug possession or sales offenses as of January 1, 2000. Of those with specified policies, the maximum state statutory penalty for the sale of a standard retail amount of cocaine, methamphetamine, or ecstasy ranged from one year of imprisonment (e.g., North Carolina) to a life sentence (e.g., Montana). For marijuana, the range was six months (e.g., North Carolina) to life (e.g., Montana). State statutory possession penalties also varied significantly from a low of 1 day to 5 years for a standard retail amount of marijuana (example states of Washington for 1 day and Minnesota for 5 years); and from approximately five months (e.g., North Carolina) to 25 years (e.g., Minnesota) for a standard retail amount of methamphetamine. The passing of years has only brought more variation to the state policy landscape. As of January 2014, possession of one ounce or less of marijuana for personal use in the states of Washington and Colorado carried no state criminal or civil penalties. In contrast, possession of a similar amount of marijuana for personal use in the state of Alabama would be classified as a misdemeanor and subject to up to 360 days of incarceration and a \$6,000 fine (NORML 2014).

Diversion to treatment, drug courts, and treatment program authorization. In stark contrast to the punitive focus of substance scheduling and associated penalties, a growing state policy reform movement has focused on the issue of diversion to drug treatment for low-level, nonviolent drug offenders in lieu of incarceration (Inciardi, McBride, and Rivers 1996). A review of the history and nature of enacted diversion to treatment laws as of August 30, 2004, indicated that 14 states had passed some form of diversion to treatment law (VanderWaal et al. 2006). Of the 14 states with existing laws at the time, almost all addressed treatment program entry, supervision/monitoring, and treatment quality and payment. Fewer addressed case disposition, sanctions, or sentencing requirements. Among the states that addressed treatment program entry issues, laws allowed mandated entry in nine states but only suggested entry in seven states, required drug assessment in nine states, and treatment as a condition of parole/probation in seven states.

There also has been a movement toward developing specialty courts focusing on family or mental health issues as well as substance abuse. Drug courts may be considered a part of the therapeutic justice movement (Steinberger 2003). In a very different approach than the traditional adversarial justice system, therapeutic justice seeks to address the underlying causes of drug use and related behaviors. Drug court judges simultaneously try to understand underlying causes of substance use as well as identify the best available treatment approaches. Drug court judges often act as case managers assessing individual progress and imposing consequences for the lack of treatment progress (Belenko, Fabrikant, and Wolff 2011; Longshore et al. 2001; NADCP 2014b). Interactions between the drug court judges and drug users have been shown to be significant predictors of treatment program success (Senjo and Leip 2001).

For both diversion and drug court programming to work, effective treatment programs must be available. Do state policies/regulations impact treatment program effectiveness? As noted previously, the Tenth Amendment to the US Constitution places primary responsibility for responding to the health problems of the country's citizens on the states – including substance abuse treatment program authorization policies. As noted in Chriqui et al. (2007; 2008), treatment programs other than opioid treatment programs certified by the Substance Abuse and Mental Health Services Administration are governed by a combination of state and national licensing or accrediting bodies. The federal government generally has no role in specifying treatment program requirements (although they do impose requirements somewhat more indirectly through federal block-grant funding requirements). Thus, the quality and types of services offered by treatment programs – to which substance offenders may or may not be referred by the criminal justice system – are primarily governed by the states. Not surprisingly, significant variance in state treatment authorization policies and requirements exists (Chriqui et al. 2007; 2008; Brown et al. 2007).

Summary of macro level 2: State law and policy. The above discussion is certainly not exhaustive in terms of all areas of state illicit drug policy; however, it highlights the significant between-state variance in drug policies, the variety of positions held along the policy continuum, and possible significant federal–state policy differences. The discussion also illustrates the recursive nature of the relationship between state and federal levels. For example, while federal policy at times precedes state policy, states are often considered natural laboratories where policy initiatives are first tried before they “filter up” to the federal level in response to emerging social concerns that call for a response beyond that of individual states (*New State Ice Co. v. Liebmann*, 285 US 262 (1932), Brandeis (dissenting)).

Mezzo level: Systems and institutions

Asserting that drug policy in the United States continues past the federal and state macro levels to a mezzo level made up of systems and institutions (see Figure 27.1) is not as unusual a claim as it might first appear. Systems and institutions usually do not directly participate in creating drug law. However, they are intimately involved in implementing – and changing – drug policy. The distinction is important. *Law* is a “body of rules of action or conduct prescribed by controlling authority [e.g., federal or state governments], and having binding legal force” (Garner 1990, 885). In the present context, drug laws define if use, possession, or manufacture of a specific substance is legal or not. Used in a general sense, *policy*, on the other hand, is the course of action taken to achieve the desired outcome of a specified law (in this case, the actions taken by federal or state governments or by organizations to achieve the specified outcome of lowering the social and individual harms associated with substance use). Without systems and institutions such as pharmacies, public health departments, police departments, prosecutorial offices, treatment providers, and

a host of others, drug policy could not be implemented. To illustrate the degree of variance and reciprocity that exists at the mezzo level within and between systems and institutions relative to drug policy in the United States, we will focus on local prosecutors and local public health agencies.

The local prosecutor. While state legislative bodies, courts, and regulatory agencies define drug law and related policy, a significant part of the responsibility for policy implementation lies with the priorities and decisions of local prosecutors and the decisions of police on the streets. Prosecutors have very wide latitude in deciding which cases to prosecute and what charges to file, and play a significant role in what sentences are imposed following a conviction or adjudication (Mahoney et al. 2001). A particularly interesting area of illicit drug law in which prosecutors play a key role is in the juvenile court. No separate body of state law regarding illicit drug penalties exists for the juvenile system; existing law and defined policy is specific to cases tried in adult court. Thus, policy regarding juvenile cases is literally defined at the level of the juvenile justice jurisdiction in which a specific youth is apprehended.

One research study involved a survey of prosecutors who were asked to respond to a variety of questions regarding typical case processing for juveniles with no prior history of any offense charged with either first-time sales or possession offenses (Terry-McElrath and McBride 2004). Almost all prosecutors reported that some form of diversion to treatment was permissible for marijuana, cocaine, and crack possession offenses. However, significant differences were found for the likelihood that diversion to treatment would be the *usual* outcome for possession based on substance type: 59% for marijuana, 22% for cocaine, and 21% for crack. Of those prosecutors who had access to a juvenile drug court, 24% reported that marijuana possession offenses would usually or always be processed through that venue, compared to 41% for cocaine and 22% for crack. Significantly, 9% of prosecutors reported that a first-time juvenile offender with no prior history usually would be sent to adult criminal court for a marijuana possession offense; percentages for cocaine and crack were 16% and 19%, respectively. Marked differences for overall case disposition severity between marijuana and cocaine also were found (Terry-McElrath et al. 2005). No prosecutors reported using dismissal/release for juveniles as the usual outcome for either marijuana or cocaine possession. However, approximately one-quarter reported minimal reaction⁸ for either substance offense. Approximately half (51%) reported community-based corrections⁹ as the usual outcome for marijuana possession, but only 28% did so for cocaine possession. Further, 22% reported placement¹⁰ as the usual outcome for marijuana possession, and 46% for cocaine possession. These data indicate that the juvenile justice system has variation both between and within substances that is as marked as that of the adult system.

Public health departments. In discussions of US drug policy, turning to look at the policy impact of public health departments may not be intuitively obvious. However, in 1988, the Institute of Medicine called attention to the importance of having a public health infrastructure able to deal with crises and enduring health problems, including drug abuse (Institute of Medicine 1998). In 2000, an editorial in the *American Journal of Public Health* specifically called for a public health approach to

drug policy emphasizing prevention, treatment alternatives to incarceration, and other programs to reduce the health consequences of drug abuse (Des Jarlais 2000). Research based on such statements included a study of public health agency (PHA) involvement in community illicit drug policy advocacy and service provision for the years 1999–2003 (McBride et al. 2008). Results indicated that, at the time, one-quarter of US youth resided in jurisdictions where illicit drug-related activity was somewhat or much more important than other PHA activities. More than one-third of youth were represented by PHAs advocating for alternatives to jail sentences for youth drug offenders; more than one-quarter were represented by PHAs involved in adult and/or juvenile drug court programs (24% and 29%, respectively). Eleven percent of youth were represented by PHAs providing or supporting needle exchange programs. Important variation was found in PHA illicit drug policy involvement by community sociodemographics, including race/ethnicity (PHA involvement more likely in communities with above-average African American populations), population density (PHA involvement with needle exchange more likely in urban areas), and region (PHAs in the West most likely be involved in illicit drug policy-related activities). The study concluded that PHAs may provide an important base for developing public health alternatives to deterrence-based policies, and such support may be strongest in communities with the highest need for such policies and services.

Summary of mezzo level 2: Systems and institutions. Systems and institutions are clearly involved with implementing – and changing – drug policy. As illustrated by local prosecutors and PHAs, possible outcomes and resources for substance users and offenders are significantly related to who is “on the ground” at the mezzo level. The odds of accessing treatment, as well as the odds of the application of deterrence policy (transferring to criminal court), vary based on what approach is taken by the local prosecutor as well as what treatment opportunities may or may not exist due to the efforts of institutions such as PHAs. Such an understanding emphasizes the importance of recognizing the policy impact of mezzo-level institutions as they selectively implement and/or advocate for or against state laws.

Micro level: Collective advocacy and the individual

As depicted in Figure 27.1, the micro level of drug policy in the United States includes both collective advocacy and the individual. Collective advocacy can involve formal or informal community-based organizations addressing a particular issue (such as Mothers Against Drunk Driving). Collective advocacy policy involvement can also take the form of direct democracy ballot measures (discussed below). The definition of “individual” includes persons who abstain from drug use, drug users, drug offenders, substance abuse treatment program participants, and so on. Individuals shape policy both by outcomes and votes. After all, it is the individual actions and needs of drug users that form the basis for social concerns about drug use, thereby driving a call for policy in the first place. Individuals also vote. And in the United States, that can include voting for elected officials (prosecutors, judges,

and legislators) and for ballot measures on medicalization, diversion to treatment, or legalization.

Direct democracy refers individual citizens collectively, actively, and directly taking part in law and policymaking via initiatives, referenda, or recalls, thereby complementing the process of representative democracy. The two relevant forms of direct democracy for drug policy are ballot initiatives and referenda. Ballot initiatives involve citizens collecting signatures for petitions to place statutes or constitutional amendments on the ballot for public vote (IRI 2013). In contrast, a referendum is when citizens have the power to reject specific legislation enacted by their legislature (IRI 2013). Initiative and referendum (I&R) activity occurs across various countries, but to different degrees. In the United States, significant I&R activity exists at state, county, and city/town levels. According to the IRI (2013), 24 states in the United States allow initiatives (18 allow constitutional initiatives; 21 allow statutory initiatives), and public referenda are available in 23 states. In the United States, the opportunities afforded by I&R aspects of direct democracy allow micro-level efforts to directly affect drug policy at the state level (which may then affect the federal level).

The I&R process in the United States has been used successfully at the state level in four main illicit drug-policy-related areas: medical marijuana, diversion to treatment, reform of civil asset forfeiture laws (the majority of such cases are drug related), and marijuana decriminalization (Ehlers 2003). The variance present in policy resulting from I&R is just as strong as that resulting from enacted legislation, as can be seen in policy related to diversion to treatment (VanderWaal et al. 2006) and medical marijuana (Pacula et al. 2002). In the 2012 November elections, voters in six states found I&R measures related to illicit drug policy on their ballots (IRI 2012). Two states had statutory initiatives to pass medical marijuana laws; one additional state had a referendum to repeal a state law that weakened a previously voter-approved medical marijuana initiative. Voters in three states made decisions on marijuana legalization (statutory initiatives in two states, a constitutional amendment in the other); the measures passed in Colorado and Washington. Thus, the first two states to legalize marijuana did so via I&R, and not through the actions of state legislatures.

The dynamic nature of a complex model

The EST framework highlights the significant variance existing on and between each level of drug policy in the United States, and underscores the importance of recognizing the interconnections existing between policy levels. The discussion noted that states have often developed drug laws and policies that were eventually put in place at the federal level, and that I&R efforts have resulted in dramatic changes to state drug law. Yet, the dynamic connections between drug policy levels are not limited to changes in state and federal law. Variation existing between federal and state levels often results in significant complexities in drug policy implementation. For example, any states that currently allow some form of legal marijuana use are in

direct opposition to strong federal prohibitions on marijuana use, possession, or distribution. In states that have either legalized/regulated recreational marijuana use, or allow medical marijuana use and have provisions for state-sanctioned dispensaries, the federal–state policy disconnect has meant that individuals wishing to engage in marijuana-related business activities deemed legal in those states have been unable to participate in many aspects of legal business such as obtaining bank loans to facilitate business operations.¹¹ (As will be noted later, the federal government in 2014 has begun to address the banking issue; Ingram 2014.)

Macro-level state law and policy significantly relate to mezzo-level system and institution actions and priorities. As noted previously, no separate body of law exists for juvenile offenders, and prosecutors have almost absolute discretion in juvenile drug offense case processing. However, analyses of associations between state statutory penalty data for low-level marijuana possession offenses and prosecutor-reported case outcomes for first-offender juvenile marijuana possession (Terry-McElrath et al. 2009) found there was a general relationship between a state's higher penalty policy environment for adult drug offenders and a prosecutor being more likely to report, usually referring first-time juvenile marijuana law offenders to criminal court. In contrast, state policies allowing probation for low-level adult marijuana possession offenses were related to higher odds of juveniles receiving some type of court-ordered probation and lower odds of out-of-home placement (such as in a juvenile correctional facility). In states where policy provided some type of rehabilitative framework (e.g., treatment or probation), prosecutors were less likely to report diversion programming availability – perhaps because the state already provided some level of treatment access within state statutes. It is important to note that state treatment authorization policies and requirements have been found to have a direct relationship with the services offered to those being referred to treatment. For example, treatment programs located in states requiring comprehensive substance abuse assessment, testing, and aftercare services were significantly more likely to offer such services (Chriqui et al. 2008).

The above sections underscore that drug policy across ecological systems levels matters (Chriqui et al. 2008). How much does it matter? To this point, we have discussed the existence of and interaction between the various levels of drug policy in the United States. Such discussions can be too abstract to illustrate the human impact of the dynamic differences and interactions between system levels. We will try to illustrate the reality of system policy differences by examining two hypothetical cases below.

An Illustrative Vignette with Marijuana

Consider the following situation: two 14-year-old US adolescents are arrested (in the United States) for possessing just under one ounce of marijuana. Assume the youth are of the same gender, race/ethnicity, and socioeconomic backgrounds, have similar family and community ties, and are found in communities with similar

demographics. However, they are not in the same communities; indeed, they are in different states. The youth have no prior histories at all with the juvenile justice system – this is their first offense, and no other charges have been brought against them at this time. Unfortunately, the two youth have developed marijuana use patterns that typify dependence and abuse. According to a simplistic and monolithic view of US drug policy, both youth would have relatively similar outcomes in terms of case adjudication. In contrast, according to an EST approach, the macro- and mezzo-level policies possibly affecting adjudication outcomes for the two youth may well vary strongly and thus result in very different outcomes.

First: what states were our youth arrested in? The state statutorily imposed adult-offense penalty schemes may not even be relevant for low-level marijuana possession if recreational use is legal (however, even in such states, underage use is not legal). In other states, statutorily imposed adult-offense penalty schemes may or may not allow conditional discharge to treatment, may or may not allow treatment to be incorporated into the penalty structure, and may or may not allow high maximum jail times for possession of one ounce of marijuana or less. Some of these state policy differences have likely been determined by the micro-level I&R efforts of the state's population. If our youth's state policy does not allow treatment to be incorporated into the statutorily imposed penalty scheme, the local PHA may be more likely to be advocating for alternatives to jail to be offered to our young offenders. Such PHA advocacy may be related to a higher likelihood of our youth's prosecutors having access to juvenile drug courts, which in turn may be related to a higher likelihood of our youth completing a court-mandated treatment program accompanied by rewards for program completion and increasing penalties for lack of program adherence. Further, our youth's successful completion of a drug court program may be related to significantly lower likelihood of later recidivism (Gottfredson, Najaka, and Kearley 2003; Wilson, Mitchell, and MacKenzie 2006). If some type of treatment option is considered by the prosecutor bringing charges against our youth, the quality and availability of treatment programs available may relate to available state treatment program authorization. In areas with low treatment program quality, neither PHAs nor prosecutors may advocate for the use of low-quality services. Further, treatment availability relates in a large degree to available funding for service provision. As federal spending on demand reduction (including treatment) decreases, federal block-grant funding available at the state level to distribute to treatment programs also decreases. If there are no treatment slots available, our youth cannot be referred to the treatment system.

And what of the likelihood that our two hypothetical youth will be processed through transfer to the criminal courts? If they are arrested in states with higher criminal court maximum jail times for marijuana possession, the likelihood of their experiencing criminal court transfer as reported by the prosecutor increases. However, if their local PHA is advocating for alternatives to jail for juveniles, their odds of criminal court transfer may decrease.

Thus, depending on (a) state scheduling, penalties, and regulations governing treatment quality, (b) local prosecutor decisions, (c) PHA advocacy and priorities,

(d) past I&R efforts to change state law and policy, and (e) interactions between all of these levels, our two very similar youth could end up with dramatically different outcomes. One 14 year-old with no prior offenses could end up in criminal court and spend time in prison with no treatment access; the other 14-year-old could have their case dismissed or be diverted to treatment, with their record expunged when they successfully complete their treatment programming. Exactly the same behaviors – committed by two individuals with the same sociodemographic characteristics – can result in very different outcomes. These very real differences make EST and drug policy in the United States not just a theory for those sitting in academic circles, but a reality that affects individual outcomes.

EST and the Future of US Drug Policy

Drug policy in the United States will remain complex. EST facilitates an integrative approach to understanding the complexity, whereby policy makers, researchers, practitioners, and members of the general public can better understand the existence of, and interactions between and within, various policy levels. Policies and actions at one level have implications for every other level. The United States is currently engaged in a large-scale natural policy experiment with marijuana. Prohibition, decriminalization, medicalization, and legalization/regulation are all being tried in various states, with Colorado and Washington being the first to implement legalization/regulation. Major social opposition to, and support for, the legalization/regulation policy change exist, and various groups are closely watching for measurable changes in marijuana use, marijuana-related impaired driving, and other social harms, as well as impact on tax revenue. Tax revenues appear to be exceeding projections; estimates are that Colorado will see \$100 million dollars in tax revenues for legalized marijuana in 2014 (Healy 2014). Such income would have considerable impact in other cash-strapped states. The marijuana legalization/regulation policy experiment clearly impacts a broad range of players, including local law enforcement and the broader correctional system, recreational users, treatment providers, substance abuse prevention advocates, physicians, patients, local governments attempting to develop appropriate policies and procedures for legal marijuana sales, and so forth. Not to mention the impact felt in states without legalization/regulation policies that border states with such policies. The experience with attempts at controlling methamphetamine production by various states showed the limits of state action apart from federal policy: it does little good if a state has a drug policy very different from its neighbors (McBride et al. 2011). It appears that the current federal government has accommodated itself to the Colorado and Washington state policy changes in terms of federal law enforcement in these states and changing regulations enabling banking services to state-sanctioned marijuana-related businesses (Ingram 2014). It remains to be seen whether the legalization/regulation of marijuana will become common state policy – possibly even federal policy – or not.

While this chapter has had a focus on marijuana in order to demonstrate the complexity of drug policy in the United States, policies for many substances are being debated, developed, and implemented constantly. The specific legal environment noted herein for marijuana may not exist in a year; however, the dynamic nature of drug policy in the United States – and the various levels of policy involved – will. The development of drugs such as synthetic cannabinoids (chemically formulated THC) and cathinones (chemical compounds that mimic the effects of cocaine or methamphetamine) require quickly adapting policy that identifies the specific formulations contained in the drugs sold. However, once a policy has been specified banning a specific compound, manufacturers often simply utilize a new formulation not yet known. Drugs such as methamphetamine are created from easily available ingredients such as red phosphorus and acetone; policy attempting to reduce the harms associated with toxic methamphetamine labs must address public access to key precursors (such as requiring specific limitations on pseudoephedrine sales) as well as keeping up with continually changing formulations used by manufacturers. Even “established” drug policy continues to evolve, such as raising the legal age for purchasing tobacco from 18 to 21 (currently the law in New York City, and under consideration by both Colorado and Utah). For all of these policy issues, change happens first at the local or state level. While the United States has gone through periods of increased concentration of power at the federal level, it remains a federal republic with much state power. Most citizens encounter drug policy as defined by state-level law and policy (policy that may have resulted from micro-level I&R efforts), implemented (directly or indirectly) through the efforts of mezzo-level systems and institutions. The state level is where the action in drug policy will likely remain for the foreseeable future, with resulting knowledge and experience later integrated into a larger national framework. And there is much to be done. Hopefully, EST can help society sort out and understand the complexity of drug policy in the United States, and support efforts to develop rational, science-based policy that reduces the harmful consequences of drug use/abuse within the framework of individual action and advocacy.

Notes

- 1 For the purposes of this paper, a “drug” should be understood to mean any substance (naturally occurring or synthetic, legal or illegal) ingested for its physiological or psychopharmacological effects – in other words, taken in order to change the way the mind or body works.
- 2 Arkansas, California, Colorado, Connecticut, Maine, Massachusetts, Minnesota, Mississippi, Nebraska, Nevada, New York, Ohio, Oregon, Rhode Island, Virginia, Vermont.
- 3 Colorado, Washington.
- 4 Arizona, Arkansas, California, Colorado, Connecticut, Delaware, Hawaii, Illinois, Maine, Massachusetts, Michigan, Montana, Nevada, New Hampshire, New Jersey, New Mexico, Oregon, Rhode Island, Vermont, Washington.

- 5 Text of the act can be found at <http://www.druglibrary.org/schaffer/history/e1910/harrisonact.htm>.
- 6 The repeal of prohibition occurred in 1933 with the passage of the Twenty-first Amendment to the US Constitution.
- 7 See the Drug Enforcement Administration's website <http://www.deadiversion.usdoj.gov/21cfr/21usc/> for further information. Alcohol and tobacco were not addressed in the CSA; separate law and policy paths were and are being forged for these two substances. Due to the space limitations of this chapter, the majority of the discussion that follows will be on currently illicit drugs. However, readers should understand that both the tobacco and alcohol policy environments in the United States involve complex federal-, state-, community-, and individual-level policy interactions. For an overview of the multilevel tobacco policy environment, see <http://betobaccofree.hhs.gov/laws/#federal>; for similar information on the alcohol policy environment, see http://alcoholpolicy.niaaa.nih.gov/about_alcohol_policy.html.
- 8 Victim-offender mediation, restitution or victim services, community service, fine, informal/voluntary probation.
- 9 Court-ordered probation with or without treatment services, home detention.
- 10 Juvenile detention center or residential facility.
- 11 Contradictions also exist within a state's own policies. Some state laws allowing the medical use of marijuana are silent in regards to how and where patients may obtain prescribed marijuana. For example, in Maryland, patients are allowed to use medical necessity as an affirmative defense at trial (contradicting federal use prohibitions), but no state law provisions address possession, cultivation, or dispensaries (Maryland Code Ann., Crim Law 5-601(c)(3)(II)). Thus, an individual may be able to successfully defend themselves against charges of unlawful use, but still remain liable for charges related to possession. See also <http://healthcare.findlaw.com/patient-rights/medical-marijuana-laws-by-state.html>.

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