Dynamics of the Drug-Crime Relationship

by Helene Raskin White and D.M. Gorman

ABSTRACT

This chapter explores changes and continuities in the drug-crime relationship during the past several decades. First, we discuss the relationship in a historical context highlighting changes in U.S. Federal policy. Next, we examine the key methodological issues involved in empirically understanding the drug-crime connection. In this section we identify inconsistencies in definitions and measurement of key variables and discuss the advantages and limitations of alternative sampling frames. We then trace trends in drug use and crime over time using national and city-level datasets. These data demonstrate that trends vary by city and that there is no uniform association between any type of drug use and any type of crime. After this, we present general theoretical models of the drug-crime connection, including that drug use causes crime, that crime leads to drug use, and that both drug use and crime are caused by the same factors. Next, we review the empirical research that supports and refutes these explanatory models. The review indicates that one single model cannot account for the drug-crime relationship. Rather, the drug-using, crime-committing population is heterogeneous, and there are multiple paths that lead to drug use and crime. The chapter concludes with a discussion of policy options and implications for the next century.

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Since 1987, when the "war on drugs" intensified in the United States, the prison population has increased by 114 percent (U.S. Department of Justice [DOJ] Bureau of Justice Statistics [BJS] 1998). During this same period, the proportion of Federal prisoners sentenced for drug offenses rose from slightly more than 40 to 60 percent. Not surprisingly, the relationship between drug use and criminal behavior is a source of concern for policymakers and researchers, as well as the general public. Researchers probing the links between drug use and crime for the past half century have produced an abundance of contradictory findings. These disparities have paved an erratic course for social policy. Antidrug and anticrime policies and programs have been developed and have received public funding, political endorsement, and popular support in the absence of any scientific evidence demonstrating their efficacy (Buchanan and Wallack 1998; Gorman 1998; Reinarman and Levine 1989; Reuter 1997). Conversely, other policies and interventions languish due to their unpopularity among politicians and the general public despite research that indicates their net benefits outweigh their costs. An obvious example of the latter is needle exchange programs (Weingardt and Marlatt 1998). In this sense, drug control policies are no different from other areas of social policy. That is, programs that fit some broad ideological agenda or vision will usually survive regardless of the scientific evidence (Sowell 1995). Research can help us make informed decisions among the choices available, but, more often than not, policy decisions concerning crime and drugs will be determined by influences other than empirical evidence.

Policymakers assume that an important connection exists between drug use and crime (Watters, Reinarman, and Fagan 1985), yet the precise nature of the relationship remains elusive. Moreover, policymakers working within different areas of government have different opinions about how to respond to crime and drug use. Law enforcement officials typically favor punishment and deterrence, whereas health and social welfare officials favor prevention and treatment. When crime and drug use decline, proponents of both approaches readily take credit; when either or both increase, those same groups point to the deficits of their opponents and argue that more funding for their favored strategies is required. As will become apparent in the review that follows, the paths into crime and drug abuse are numerous and varied; as such, less dogmatism and greater pragmatism and eclecticism would help us respond to these problems more appropriately. In addition, we should recognize that demand for drugs emanates from the tastes and preferences of millions of individuals and families and that such aspects of life are largely beyond the control of government (Caulkins and Reuter 1997). Consideration of this very simple fact might have cautioned the writers of the Anti-Drug Abuse Act of 1988 against declaring that it was the "policy of the U.S. Government to create a drug-free America by

1995." As we will see below, despite spending hundreds of millions of dollars on the war on drugs between 1988 and 1995, drug use among adolescents increased during this period.

Given that there are different paths into drug use and crime, and hence, different subgroups of criminals and drug users, the nature of the drug-crime relationship varies, depending on which subgroup is analyzed. Over the past 30 years, the country has witnessed various drug epidemics (for a discussion of the stages of development of drug epidemics see Chaiken 1993), and, with each, the nature and rates of drug-related crimes have changed. Early descriptions of the drug-crime connection were drawn from studies of criminality among narcotic addicts (e.g., Nurco et al. 1984; McGlothlin, Anglin, and Wilson 1978) or alcoholics (e.g., Collins 1981) or studies of drug use among criminal offenders (e.g., U.S. DOJ, BJS 1983; Weissman, Katsampes, and Giacinti 1974). This research supported the notion that alcohol use is associated with violent crime, whereas other drug (especially heroin) use is associated with the commission of property crime. Proponents of the alcohol-violence model emphasized the psychopharmacological effects of alcohol intoxication as the cause for violent behavior (Collins 1981; Pernanen 1981). The drug-property crime model was based principally on the notion that heroin (and other drug) addicts commit property crimes in order to secure money for drugs (Nurco et al. 1984; McGlothlin, Anglin, and Wilson 1978). Interestingly, proponents of the alcohol-violence model did not give weight to the fact that a substantial proportion of inmates convicted of property crimes were under the influence of alcohol at the time of the offense (U.S. DOJ, BJS 1994a). Similarly, drug-property crime model proponents have only recently given weight to the fact that heroin addicts are often involved in violent crimes, typically committed over drug possession and sale (see Goldstein 1985). As powder cocaine and crack cocaine became popular in the 1980s, the nature of the drug-crime relationship changed. Rates of violent crimes, especially those related to drug distribution and marketing, increased markedly and the term "systemic violence" was applied to this new type of drug-related crime (Goldstein 1985). At the same time, possibly due to the lower cost of crack compared with heroin and powder cocaine and the higher profit in drug dealing, rates for property crime decreased. Recent data from the Arrestee Drug Abuse Monitoring program (U.S. DOJ, National Institute of Justice [NIJ] 1998) indicate that cocaine use among arrestees is dropping for younger cohorts and suggest a gradual aging out of the cocaine-using population. Hence, the question becomes whether these recent changes in patterns of drug use will again lead to changes in the drug-crime relationship.

The objective of this chapter is to review the literature on the drug-crime nexus. Within the limitations of space allowed, all relevant literature cannot be covered, and the reader is referred to several excellent reviews for greater detail (e.g., Graham, Wells, and West 1997; Fagan 1990; Chaiken and Chaiken 1990; Harrison 1992a; Osgood 1994; Miczek et al. 1994; Parker and Auerhahn 1998; Watters Reinarman, and Fagan 1985; White 1990, 1997a, 1997b).1

For the purpose of this chapter, drug use refers primarily to the use of illicit substances such as marijuana, cocaine, and heroin, and crime refers primarily to predatory crime that encompasses both violent and property crime (see Chaiken and Chaiken 1990). Our focus is on the relationship between drug use and crime rather than on drug use alone. Thus, illicit drug use and drug possession, which are crimes in and of themselves, are not considered here to be crimes unless as part of research findings specifically linking them to the commission of other types of crime. To include as "crime" any offense involving only the use or sale of drugs would be misleading, as it would inflate the drug-crime relationship.

In the section that follows, we discuss the drug-crime relationship in a historical context. Next, we examine the key methodological issues involved in empirically understanding the drug-crime connection. We then trace trends in drug use and crime over time, using national and city-level datasets. After this, we present general theoretical models of the drug-crime connection and review the empirical research that supports and refutes these models. The chapter concludes with a brief summary of the research and a discussion of its implications for the next century.

Historical Context

During the 19th century, substances such as opiates and cocaine were regarded as medications and freely sold in drugstores, grocery stores, and traveling medicine shows in the form of pharmaceutical products such as cough medicines (Musto 1991). The primary consumers of these medicines were upper- and middle-class women, and the other major drug user group was Chinese immigrant railroad workers who smoked opium. Initial attempts at drug control focused on domestic regulation such as the registration of those dispensing drugs and the prohibition of adulteration and mislabeling (U.S. DOJ, BJS 1992a). The Federal legislation that fundamentally altered the approach to U.S. drug control policy was the Harrison Act of 1914. The Harrison Act required strict accounting for the importation and dispensing of opiates and cocaine—these measures to be accomplished by registration of those involved in the drug trade and the imposition of a tax at each point of transfer. Initially,

physicians were permitted to prescribe and administer cocaine and opiates to patients, but decisions of the Supreme Court in 1919 and 1925 made this practice illegal and held that the Federal Government had ultimate control over the dispensing of these substances. As Musto (1991) observes, the severity of Federal laws concerning the sale and possession of opiates and cocaine gradually increased from the 1920s through the 1940s. Further, in 1937, marijuana was placed under the same controls as opiates and cocaine.

Drug use declined throughout the 1940s and 1950s, although organized crime began to import large quantities of heroin into the United States during the latter decade. A number of drug epidemics affected major urban centers during this time as well (Musto 1991; Rouse and Johnson 1991). Among the general population and in academic circles, drug use was largely considered a marginal activity. This, of course, changed in the late 1960s and 1970s when use of drugs (especially marijuana and hallucinogens) became more commonplace among American youth. During the 1960s, the proportion of the population reporting having used marijuana increased from 4 to 24 percent, and the heroin addict population grew from 50,000 to 500,000 (DuPont 1978). At the same time, rates of both property and violent crime began to rise dramatically. In response, President Johnson declared a war on crime in 1965, and the drug-crime relationship was re-identified by the 1967 President's Commission on Law Enforcement and Administration of Justice (Inciardi 1992). Four years later, President Nixon declared a war on drugs, and legislation of the early 1970s established Federal agencies in the areas of law enforcement (e.g., the Drug Enforcement Administration [DEA]), prevention and treatment (e.g., the Special Action Office for Drug Abuse Prevention [SAODAP]), and research (e.g., the National Institute on Drug Abuse [NIDA]). The Federal drug abuse prevention and law enforcement budget rose from $81 million in 1969 to nearly $690 million in 1975 (Cline 1974). During the early 1970s, more Federal drug control dollars were committed to prevention and treatment than to law enforcement, but starting in 1975, the latter began consuming a greater proportion of the budget (Cline 1974; Goldberg 1980).

As marijuana use increased and law enforcement efforts intensified, arrests for possession soared, and many of the arrestees were middle-class youths. This, combined with growing scientific debate over the supposed dangers of marijuana, led to calls for a de-escalation of the war on drugs (U.S. DOJ, BJS 1992a). As early as 1972, the National Commission on Marihuana and Drug Abuse (1973) concluded that the health effects of marijuana were minimal and that legalization of the drug should be considered. In 1973, the State of Oregon initiated a policy of decriminalization when it reduced to a civil violation the possession of less than 1 ounce of marijuana. By 1978, 10 other States had enacted

From the early 1920s to the early 1970s, the U.S. prison population remained relatively stable at about 110 per 100,000 population; however, it more than tripled over the next two decades, to 411 per 100,000 by 1995. Changes in drug-related sentencing practices, such as differential penalties for possession of powder and crack cocaine, were credited with much of this increase.

similar legislation (Single 1989). Although President Ford continued the drug control policies of the previous two administrations, acceptance that the drug problem could not be totally eliminated began to emerge, and interest in drug control issues began to fade at the Federal level (Goldberg 1980). The most fundamental break with the policies of the previous two decades occurred, however, under the Carter administration of the late 1970s. The Carter administration endorsed the decriminalization of possessing small amounts of marijuana, noting that penalties against use of the drug should not do more harm to individuals than use of the drug itself (a theme picked up by "harm reduction" advocates 20 years later). Following a peak in 1979, adolescent use of illicit drugs began to decline (see following text for details). Moreover, evidence suggested that those States that had liberalized their marijuana laws did not experience greater use, although they did enjoy substantial savings on drug enforcement activities (Single 1989).

This reversal in the type of drug control policies followed in the United States since the Harrison Act of 1914 was short lived. Government interest in and spending on drug control policies increased substantially during the latter part of the 1980s with the enactment of two pieces of legislation—one under the Reagan administration (the Anti-Drug Abuse Act of 1986) and one under the Bush administration (the Anti-Drug Abuse Act of 1988). Following the theme of the "Just Say No" campaigns of the early 1980s, there was a return to the idea of "zero tolerance" and a commitment to a "drug-free America." Anything that opposed these fundamental principles in any way—such as talk of "improper use" or "good" versus "bad" drugs in education programs—was not to be tolerated (see U.S. Department of Education 1987). In 1985, the total Federal drug control budget stood at $2.8 billion. By the early 1990s, it was in the region of $11 to $13 billion a year (Executive Office of the President, Office of National Drug Control Policy [ONDCP] 1994). All segments of the Nation's drug control apparatus benefited from this increased expenditure—international interdiction, domestic law enforcement and corrections, research and development, prevention, and treatment—although the former two (known collectively as "supply reduction") garnered two-thirds of the budget.

Although there was some initial expectation that there would be a shift from law enforcement and interdiction to prevention and treatment (so-called "demand reduction") under the Clinton administration, this failed to materialize (Caulkins and Reuter 1997; Gorman 1993). Demand reduction received the same proportion of the Federal drug control budget (34 percent of $16 billion) in 1998 as it did in 1992 (Executive Office of the President, ONDCP 1998a, table 5). Perhaps the biggest changes in drug control policy introduced in the latter part of the 1990s were the formation of less utopian goals and objectives and the move toward using empirical data to assess agency performance in terms of reaching these goals and objectives. For example, the 1998 National Drug Control Strategy proposes to reduce prevalence of drug use among adolescents by 50 percent and crime associated with drug trafficking and use by 30 percent by the year 2007. (Executive Office of the President, ONDCP 1998b). A system of data collection to track progress toward these goals is described, and the performance of the single State agencies and their grantees will now be judged by an empirical yardstick (Executive Office of the President, ONDCP 1998c). Whether the performance targets described in the Strategy are attainable is a matter of debate (as is the issue of whether they can be accurately tracked given available datasets), but they are clearly more realistic than the goal of "creating a drug-free America" described in the legislation of 10 years earlier.

Given the nature of U.S. drug control policy over the past two decades, it is hardly surprising that drug-related arrests, prosecutions, and imprisonment have increased dramatically during this period. Harrison (1992a) has shown that drug-related arrests nearly quadrupled between 1980 and 1989, and this increase was disproportionately high in relation to arrests for nondrug offenses. The growing number of drug-related arrests, together with increases in the number of defendants receiving custodial sentences and in the length of these sentences, has led to immense prison overcrowding. From the early 1920s to the early 1970s, the U.S. prison population remained relatively stable at about 110 per 100,000 population; however, it more than tripled over the next two decades, to 411 per 100,000 by 1995 (Blumstein 1995a; Haney and Zimbardo 1998). During the same period, the prison population became younger and disproportionately African-American. Between 1985 and 1995, the incarceration rate for African-American men rose from 3,544 to 6,926 per 100,000. Changes in drug-related sentencing practices, such as mandatory minimums, the three-strikes law, and differential penalties for possession of powder and crack cocaine, were credited with much of this increase (Blumstein 1995a; Haney and Zimbardo 1998). The increase in drug arrests and prosecutions fundamentally changed the composition of the imprisoned population in the country, with 60 percent of Federal prisoners incarcerated for drug-related crimes by early 1990s.

Concern with such issues as prison overcrowding and the apparent racial bias in drug arrests, prosecutions, and sentencing has led in recent years to the development of an alternative to drug prohibition (or "zero tolerance") in drug policy analysis. This approach is generally referred to as "harm reduction." It is employed in some European countries and in Australia, and it has vocal advocates in the United States. According to this perspective, the primary goal of U.S. drug policy—total prohibition of use—is unrealistic and unattainable, and specific objectives, such as preventing the entry of drugs into the country, lowering demand among youths, and reducing the health and social costs of drug use, have simply not been achieved (Reuter and Caulkins 1995; Weingardt and Marlatt 1998). Indeed, harm reduction proponents argue that current prohibitionist policies not only fail to reduce drug use and associated problems, but they generate additional unintended negative consequences, such as neighborhood destabilization and increased violence by dealers (Rasmussen and Benson 1999; Reuter 1997). As an alternative, they propose that the fundamental objective of drug control policy should be to limit the harm caused by drugs and that reducing prevalence, although one means of pursuing this end, should have no special status or overarching role (Reuter and Caulkins 1995; Reuter 1997).

As MacCoun and colleagues observe, nobody, with the exception of some libertarians, seriously advocates relaxing drug laws to create a "free market" for substances such as cocaine and heroin (MacCoun, Reuter, and Schelling 1996). Rather, harm reduction strategies fall within a range of options that lie between legalization and full prohibition and generally entail some type of prescription-based model (e.g., the medical use of marijuana), regulatory model (e.g., that drugs be available to those with an appropriate license), or decriminalization model (e.g., drug use remains illegal, but enforcement negligible and penalties minimal) (MacCoun, Reuter, and Schelling 1996; Weingardt and Marlatt 1998). Although often thought of as primarily relevant to drug treatment (e.g., in the form of modalities such as needle exchange programs, methadone maintenance, and relapse prevention), harm reduction techniques that are relevant to prevention and law enforcement have been described in the literature (Hellawell 1995; Midford, McBride, and Munro 1998). In each case, it is argued that resources should be targeted at those who generate the most cost from their drug use and who have the most intractable problems (e.g., addicts and drug-using offenders), and less emphasis should be placed on casual drug users, who are least likely to harm themselves or others (Reuter and Caulkins 1995). In this sense, harm reduction makes the most sense for those who are unconcerned about drug use per se, but who are worried about the social costs associated with use and abuse, including violence and property crime (Caulkins and Reuter 1997). This is a fundamentally different mindset than the one that has dominated U.S. drug control policy since the Harrison Act.

This brief overview of historical trends in policy and some of the major themes of recent years sets the stage for an examination of the empirical evidence pertaining to the drug-crime relationship. We begin with a discussion of some key methodological issues.

Methodological Issues

There are numerous methodological issues involved in studying the alcohol/drug use-crime nexus. Here we discuss some of those related to definitions, measures, and samples (for additional issues, see Fagan 1993a; White 1990, 1997a).

Definitions

There is a lack of uniformity in definitions of crime, drugs, and drug-related crime. In some studies, crime refers to murder, rape, robbery, theft, and burglary—acts that fall within most people's definitions. In other studies, however, crime refers to relatively trivial acts, such as taking a few dollars from one's parents (this is especially true in studies of juveniles; Stark 1987). Some studies include drug use and/or drug selling in delinquent behavior scales, which obviously confounds the relationship between drug use and delinquency/crime scales (Carpenter et al. 1988). The meaning of "drug use" can also vary widely from one study to the next—ranging from having a sip of alcohol or a puff on a marijuana joint, to symptoms of physical dependence and withdrawal.

The term "drug-related crime" also means different things in different studies. For example, drug-related homicide can include murders related to drug distribution, murders committed while using drugs, murders committed in the act of a crime to get money for drugs, or murders that simply occur in high-drug-use neighborhoods. Which category is included in rates of drug-related homicide varies from one jurisdiction to another, so data from different studies using official statistics are often incompatible. Also, in some official statistics and research reports, alcohol is included as a drug when estimating the level of drug-related crime, whereas in others, it is not. In addition, certain types of events—e.g., a robbery to get money for groceries because the grocery money was spent on drugs, or a man beating his wife for taking his drugs—may or may not be counted as a drug-related crime (Miczek et al. 1994). Given this lack of agreement and consensus in these domains, one must be cautious in making comparisons across studies of alcohol/drug use and crime.

Measures

Most of the survey research on the alcohol/drug-violence connection has relied on self-reports, which generally are accepted as reliable and valid indicators of both criminal behavior and alcohol and drug use. In addition, self-reports provide a more direct, sensitive, and complete measure of various deviant behaviors than do measures based on official law enforcement and institutional records (for greater detail and supporting studies, see Elliott, Huizinga, and Menard 1989; Farrington et al. 1996; for a discussion of measurement errors inherent in official records, see Fagan 1993a). Of course, there are many caveats concerning the use of self-report data, especially with long-term drug users who may lack the inability to remember past events, misunderstand many questions, and conceal certain behaviors and/or exaggerate others (Chaiken and Chaiken 1990). Likewise, offenders may exaggerate the role of alcohol and drugs prior to an offense in order to justify their behavior. Moreover, for ethnic/racial minorities, the validity of responses may be especially troublesome (De La Rosa and Caris 1993; Hindelang, Hirschi, and Weis 1981).

Recent data comparing drug testing results with self-reports among offender populations have cast some doubt on the validity of the latter technique of data collection. For example, in one study of a sample of high-risk adolescent males, only about one-third of those with positive hair-sample analyses for cocaine reported recent use, while half reported any lifetime use of the drug (Lipton and Johnson 1998). Data from the Drug Use Forecasting (DUF) system indicate that about one-half to two-thirds of those who test positive in urinalysis also acknowledge recent drug use in self-reports (Harrison 1992b). Besides the DUF survey, few studies collect blood, breath, saliva, or urine samples to determine alcohol and drug levels. When drug testing is done, it reflects use at the time of arrest and not at the time of the offense (and the two events can obviously be separated by some time). Homicide studies using autopsy results collect data only from victims, and in cases in which a victim did not die immediately, drugs may have been metabolized out of the system by the time of the autopsy (for details, see Roizen 1993). Finally, the accuracy of drug tests depends on the type and quantity of the drug consumed, how recently it was used, and the individual's capacity to metabolize the drug (Golub and Johnson 1999).

Measurement of alcohol and drug use varies greatly across studies: some studies measure acute use, and others measure chronic use; some measure drug-related problems, and others measure dependence. Indeed, different measures of the same phenomenon (e.g., dependence) can differ in terms of whom they identify as having a problem, even among clinical populations (Gorman et al. 1989). Also researchers often measure frequency of use, not quantity—yet

quantity (especially "bingeing") may be more important to criminal behavior, especially for violence (Collins 1993). Similarly, there is a lack of consistency in crime measures across studies, including crime rates per year, frequency, crime days, and heterogeneity of crimes (for details, see Chaiken and Chaiken 1990; see McBride and McCoy 1982; Roizen 1993; and White 1990 for additional issues in definitions and classification schema). Finally, because drug use and delinquency are constantly changing behaviors, measures that tap a static point may not represent the true behavior pattern (see Blumstein, Farrington, and Moitra 1985).

Samples

Some researchers rely on captive samples in prisons or in treatment programs to study the drug-crime relationship. Such samples have the advantage of providing a pool of subjects who exhibit high frequencies of the behaviors of interest; however, the relationships observed may not be generalizable to the general population and may overestimate the degree of co-occurrence. For example, research indicates that heavy drug users and problem drinkers are more likely to be arrested and that high-rate offenders who do not get caught are usually not frequent drug users (Chaiken and Chaiken 1990; Collins 1986). Further, incarcerated offenders may be the most frequent offenders, the most indigent, or the least skilled, all of which might place them at greater risk for apprehension and incarceration (Harrison 1992b).

On the other hand, samples drawn from general populations have limited numbers of individuals engaging in drug use or crime. Many general surveys of youths are administered in schools and therefore omit dropouts who are known to have higher rates of drug use and delinquency (Fagan and Pablon 1989). Similarly, the National Household Survey on Drug Abuse (NHSDA) misses institutionalized (e.g., hospitalized, incarcerated) members of the population, individuals living on military bases, and transients (Harrison 1992b)—all of whom can bias prevalence estimates. In addition, studies of general populations make it difficult to test theories about the causes of serious delinquency or drug abuse.

A final key issue with regard to sampling problems is that studies of ethnic/racial groups have been hindered by small nonrandom samples. Moreover, differences within ethnic groups (e.g., Mexican-Americans versus Puerto Ricans) are often ignored (for greater detail, see De La Rosa and Caris 1993). The differences between these subgroups in their patterns of drug use and the commission of crime can be as great as the differences between large heterogeneous ethnic/racial groups (e.g., whites versus Latinos).

The issues raised here provide an overview of the conceptual and methodological ambiguities that characterize alcohol/drug-crime literature. The following review of the literature should be interpreted within these limitations.

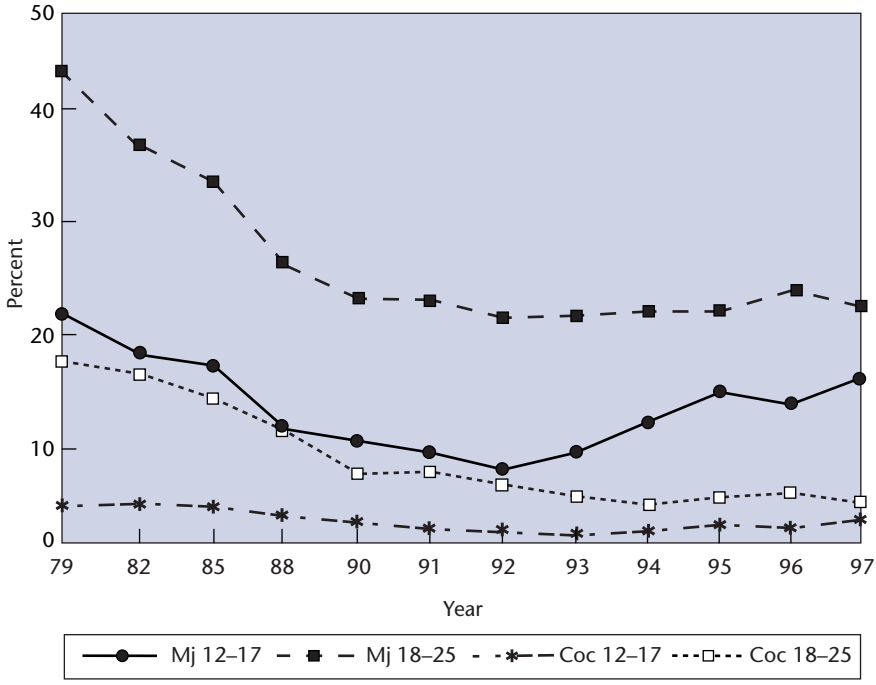
Trends in Drug Use and Crime

National trends in drug use

Trends in adolescent drug use in the United States can be tracked from data collected through two large-scale national surveys: the Monitoring the Future (MTF) study, which reports continuous annual data from 1975 onward, and NHSDA, which was conducted every 3 years between 1976 and 1988 and annually after 1990. NHSDA also collects data from adults. Both surveys show that among adolescents, illicit drug use (which was primarily marijuana use) peaked in 1979, with 39 percent of 12th graders in MTF reporting use during the previous 30 days (Johnston, O'Malley, and Bachman 1998) and 18.5 percent of 12- to 17-year-olds in NHSDA reporting use during a similar period (U.S. Department of Health and Human Services 1999). By 1992, reported use in these age groups was down to 14 percent in the former survey and 6 percent in the latter. Since then, however, illicit drug use (especially marijuana use) among adolescents has steadily increased, with 26 percent of high school seniors in 1997 reporting use during the past month (Johnston, O'Malley, and Bachman 1998). Rates of heroin use have remained relatively stable over time. For cocaine use, there is some differentiation by age. Cocaine use rates for youths peaked around 1979, remained stable until about 1985, declined thereafter, and have shown a slight increase since the mid-1990s. In contrast, cocaine use rates for adults peaked around 1985. These trends and differences by age group are evident in exhibit 1, which shows national trend data in annual prevalence of marijuana and cocaine use from NHSDA for young adults (ages 18–25) and adolescents (ages 12–17) between 1979 and 1997.

Other data also support declines in drug use among adults. First, data from SmithKline Beecham Clinical Laboratories indicate that only 5 percent of the American workforce tested positive for drugs in 1997 and 1998, compared with 9 percent in 1991. These data indicate an increase in positive tests for marijuana and a decrease for cocaine (Center for Substance Abuse Research [CESAR] 1997, 1998a). Second, according to the Drug Abuse Warning Network (DAWN) data, the number of national emergency room visits directly related to drug use declined by 6 percent from 1994 (the peak year since the data were first collected in 1978) to 1996 (CESAR 1998b).

Exhibit 1. Trends in annual prevalence of marijuana (Mj) and cocaine (Coc) use by age for adolescents and young adults, 1979–97



Source: U.S. Department of Health and Human Services, Substance Abuse and Mental Health Services Administration 1999.

Levels of drug use have also been studied within offender populations. Rates of drug use by incarcerated offenders, as well as among arrestees identified in the DUF system, are somewhat inconsistent with rates reported in the general population with respect to cocaine use (Harrison 1992a). Among the jail and arrestee populations, there were large increases in cocaine use in the mid- to late 1980s while these rates were declining in the general population. Yet, Harrison (1992b) controlled for year of admission to prison and concluded that, although rates of drug use are much higher in the prison population compared with the general population, the trends are similar. In addition, she observed that differences between the general population and those involved with the criminal justice system may reflect a lag effect. That is, the criminal population with higher rates of drug use and related problems may be the last to give up or

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moderate consumption. Thus, as rates of drug use change in the general population, they will impact on special subcultures more slowly (see Skog 1991).

Using data from the Arrestee Drug Abuse Monitoring program, Golub and Johnson (1999) identified three distinct generations of drug-using arrestees in Manhattan from 1987 through 1997. Members of the "heroin injection generation" were born in the years 1945–54 and began injecting in the 1960s and 1970s, with peak years of initiation occurring between 1965 and 1969. Their numbers have substantially dwindled due to a maturing out of drug use, successful treatments, and death (especially from AIDS). Members of the "cocaine/crack generation" were born in the period 1940–69, with peak use years occurring between 1987 and 1997. Few of those born in 1955 or later injected heroin; however, many of the older heroin injectors added crack or cocaine to their list of drugs of choice. The hardcore members of the cocaine/crack generation were primarily born between 1955 and 1969, and the peak years for initiation of crack occurred from 1985 to 1988. The new "blunt generation" includes individuals born after 1970, and their drug of choice is marijuana. Most have not used heroin or crack, probably because of problems observed among the older users of these drugs. Although many of the older cohorts had used marijuana at some time in their lives, few had marijuana in their urine samples when they were arrested, compared with the younger blunt generation.

Such changes in the popularity of different types of drugs may account, at least in part, for changes in the drug-crime relationship. For example, it is entirely plausible that differences in the way that heroin and crack are used, along with differences in their psychoactive properties, account for the greater number of crimes attributed to crack users (especially violent crimes). That is, the high from the heroin injection lasts several hours and many addicts do not continually use all day long. In contrast, the crack high lasts only about 5 minutes and users tend to use multiple times a day, requiring additional purchases. The latter user is going to be more active and motivated to commit predatory crime in order to buy and use the drug several times a day (Johnson et al. 1994).

National crime trends

According to the National Crime Victimization Survey (NCVS), property crime rates underwent an uninterrupted decrease from the early 1970s onward (Rand, Lynch, and Cantor 1997). Indeed, in 1997 there were fewer property crimes than in any other year since the 1973 inception of the survey (Rand 1998). In contrast, the Uniform Crime Reports (UCR) data show an increase in property crime during the 1970s, a decline during the early 1980s followed by an increase until the end of the decade, and a subsequent decline during the1990s. With regard to violent crime, NCVS data show that from 1973 to 1994, rates vacillated: they were stable from 1973 through 1977, then increased and peaked in 1981, then decreased through 1986, and then increased from 1986 to 1993 to nearly peak levels. Since 1994, they have decreased steadily, again reaching an all-time low in 1997. UCR data again indicate a steady increase since the 1960s, with a decline commencing in the 1990s (U.S. DOJ, BJS 1989–91, 1992b, 1993, 1994b, 1995–98).

Despite important differences, both datasets indicate substantial declines in violent crime during the past few years. The murder rate in 1997 was the lowest the country had seen since 1967 (Snyder 1998). Although juvenile homicide arrest rates increased substantially between 1988 and 1993, they too declined 39 percent between 1993 and 1997 (Snyder 1998). The juvenile arrest rate for all violent crime peaked in 1994 (after a 60-percent increase from 1988), but started to decline thereafter. In contrast, juvenile arrests for property crime have remained steady, and juvenile arrests for drug abuse violations have increased 82 percent during this same period.

A report contained in the 1997 UCR describing trends in drug-related arrests between 1980 and the early 1990s observed that the Nation experienced its highest level of drug arrests in 1995, when an estimated 1.5 million people were arrested for selling, manufacturing, or possessing illegal substances (U.S. DOJ, Federal Bureau of Investigation 1997). Between 1990 and 1995, marijuana-related arrests increased by 80 percent. Accompanying this was a change in the age and racial composition of arrestees: juvenile drug-related arrest rates increased by 132 percent (compared with 28 percent for adults) and, although drug-related arrest rates increased for all ethnic groups, the proportional increases for blacks and other races were greater than those for whites (98 percent, 96 percent, and 69 percent, respectively).

It should also be noted that such aggregate data obscure trends within subgroups of the population that may have fundamental policy implications. For example, the increases in homicide rates identified between the mid-1980s and early 1990s were attributable primarily to increases for youths (Blumstein, 1995b).

During this period, when the homicide rate was relatively stable among young adults, the homicide rate doubled for 18-year-olds and increased by 138 percent for 16-year-olds. At the same time, there was a large increase in juvenile drug arrests, especially among nonwhites in urban areas. Further, during this time, the use of guns in juvenile murders doubled. The increases in juvenile homicide offenders have been linked to increases in gun use, as well as the increase of youths involved with crack distribution (see next section; Blumstein 1995b).

Drug/crime nexus in specific cities

We were interested in closely examining trends in drug use in relation to trends in crime. Harrison (1992b) argues that, because of local differences, trends in drug use and crime should not be assessed at a high level of aggregation (e.g., at a national or regional level). Thus, the two national epidemiological drug use surveys, MTF and NHSDA, were not suitable because the former only disaggregates data to four regions of the country, whereas the latter does not disaggregate at all. Also, subgroups of the population are omitted and/or underrepresented in these surveys, including some subgroups (e.g., school dropouts and those in institutions) that are likely to include high numbers of both drug users and drug users involved in crime (Harrison 1992b). We therefore decided to extract drug use data from the NIJ DUF program (renamed the Arrestee Drug Abuse Monitoring [ADAM] program in 1997), which uses urinalysis and self-report data to assess recent drug use among arrestees in more than 20 cities in the United States (U.S. DOJ, NIJ 1998, 1989–97).

DUF/ADAM is not a nationally representative sample, but rather is limited to large metropolitan areas. The trends observed in these data may not be relevant to suburban or rural areas or to urban areas not included in the project. Also, the data come from arrestees, a subgroup of these cities that is most representative of their underclass (i.e., those who are poor, uneducated, and involved in a constellation of problem behaviors). Again, the pattern of use among this subgroup may not be representative of the general population (Harrison 1992b). Finally, it should be noted that most crimes do not result in arrest and that arrest is more likely to occur in the case of serious crime (e.g., robbery, assault, and burglary) and when a criminal is a frequent drug user (Chaiken and Chaiken 1990; Nurco 1998). Thus, DUF/ADAM data may not be generalizable to all types of criminals.

Despite these limitations, DUF/ADAM data have the advantage of being reported at the level of specific cities, rather than at a larger level of aggregation. For purposes of assessing violent and nonviolent crime in the same cities, two datasets were available—NCVS and UCR. We chose the latter, as it has

the advantage of including homicides (a major crime of interest), although we were aware that UCR, too, has distinct limitations primarily because it contains only crimes reported to the police (see other volumes in this series for details on each dataset).

Since its inception in 1988, 24 cities have contributed data to the DUF/ADAM project. Exhibit 2 presents a summary of DUF/ADAM drug use data among male arrestees and UCR crime data from 17 of these cities. Five cities (Atlanta, Chicago, Denver, Kansas City, and Omaha) were excluded from the present analysis, as there were 2 or more years of missing data from either of the datasets. Two other cities (Indianapolis and Manhattan) were excluded, as comparable geographic units are not reported in DUF/ADAM and UCR. Urinalysis data are presented, as many more arrestees test positive by this method than by self-report.

Exhibit 2. Correlations between and among drug use and crime

	Coc & Her	Coc & Mj	Viol & Prop	Viol & Mj	Viol & Her	Viol & Coc	Prop & Mj	Prop & Her	Prop & Coc
Birmingham	.06	−.73	.79	−.17	−.81	.26	−.42	−.57	.24
Cleveland	−.37	−.76	.46	−.67	−.27	.10	−.80	−.34	.50
Dallas	.57	−.62	.82	−.87	.26	.72	−.57	.67	.89
Detroit	.82	−.67	−.33	−.67	.20	.32	.05	.15	.18
Fort Lauderdale	.15	−.10	.55	−.50	.14	.37	−.74	−.60	−.41
Houston	−.10	−.12	.14	−.61	−.42	.23	−.06	−.25	.91
Los Angeles	.79	.23	.89	−.69	.53	.27	−.47	.82	.62
Miami	−.14	−.33	.86	−.87	.18	.70	−.76	.23	.79
New Orleans	−.27	−.17	.65	−.52	−.36	−.13	−.42	−.35	.47
Philadelphia	–.28	−.72	.25	.08	.08	−.61	−.48	−.53	.35
Phoenix	.72	−.57	−.09	−.60	−.77	−.64	−.02	.29	.07
Portland	.40	.18	.87	.37	.08	.29	.69	.28	.55
St. Louis	.29	−.02	.64	−.31	.09	.76	.51	.47	.76
San Antonio	.26	−.37	.46	−.66	.61	.76	−.29	.92	.07
San Diego	.89	.05	.27	−.61	.27	.58	.29	.99	.91
San Jose	.50	−.77	−.82	.65	−.53	−.77	−.72	.55	.98
Washington, D.C.	.73	−.89	.05	−.37	.05	.12	.40	−.59	−.46
Average	**.30**	**−.38**	**.38**	**−.41**	**−.04**	**.20**	**−.22**	**.13**	**.44**

Note: Coc=cocaine, Her=heroin, Mj=marijuana, Viol=violent crime, and Prop=property crime.

Sources: U.S. Department of Justice, Bureau of Justice Statistics, 1989–91, 1992b, 1993, 1994b, 1995–98; U.S. Department of Justice, National Institute of Justice, 1998; U.S. Department of Justice, National Institute of Justice 1989–97.

We were interested in whether there was any association between drug use and crime within each of these 17 cities. Because data were available for only 10 years for each city, there were insufficient data points from which to conduct sophisticated analyses. Instead, we simply treated each year as an "individual" and looked at the correlations among DUF/ADAM positive rates for marijuana, cocaine, and heroin and UCR property and violent crime rates.

What is especially noteworthy about the data is the lack of consistency across cities. That is, for each relationship there are both positive and negative and large and small correlation coefficients. For example, the association between violent crime and cocaine use is 0.76 in St. Louis and San Antonio, whereas it is –0.77 in San Jose. Yet, this relationship is generally positive in most cities, indicating that both cocaine use and violent crime were increasing and decreasing in the same years. In comparison, the relationship between marijuana use and violence is primarily negative and relatively strong, and the relationship between violent crime and heroin use is weaker and less consistent. The relationships between drug use and property crime are consistent with those for violent crime. That is, the association of property crime with cocaine use is mostly positive; with marijuana use, mostly negative; and with heroin use, largely inconsistent. In most cities, there is a negative association between marijuana and cocaine, indicating that, as use of one increased, use of the other decreased. The association between cocaine and heroin, however, is generally positive, indicating relatively similar trends in use. Finally, the average correlation between property crime and violent crime is positive. However, coefficients range from –0.60 to 0.99. Again, it should be noted that positive coefficients indicate a correlative but not necessarily causative relationship.

Exhibit 3 presents data from these cities in terms of trends in violent crime (i.e., homicide, rape, robbery, and assault) and property crime (i.e., larceny, burglary, and auto theft), compared with trends in testing positive for marijuana, cocaine, and heroin. This exhibit further illustrates the findings shown in exhibit 2 and demonstrates that the trends vary greatly from city to city. For example, the trends in cocaine and violence are almost parallel in Phoenix and St. Louis, but there is no relationship in San Jose. Similar discrepancies are noted between property crime and heroin trends. In San Diego and San Antonio, the trends look parallel, but in Birmingham, Fort Lauderdale, and Washington, D.C., the trends move in the opposite direction. In order to understand why these differences exist, one might need to separately examine the intricacies of the drug markets in each city. For some cities, such as Philadelphia, the drop in cocaine use throughout the 1990s was drastic, in some it was gradual, and in some it was erratic. By contrast, in some cities, such as Fort Lauderdale and Phoenix, cocaine use increased during this same period.

There are also some trends that are fairly consistent across cities. For example, in most cities, marijuana use sharply declined between 1990 and 1991 and has been increasing since then. However, in seven of the cities, the 1997 marijuana rates were higher than those of the late 1980s, in six they were lower, and in four they were about the same. Further, testing positive for marijuana surpassed testing positive for cocaine somewhere between 1993 and 1996 in most cities. However, the rates for the former never reached those of the latter in Fort Lauderdale, Houston, Los Angeles, Miami, and New Orleans, and both rates were almost equal in Phoenix and Portland. The peak in violence rates also varied across cities. Almost half the cities experienced peaks from 1990 to 1992, whereas an equal number experienced peaks in 1993 through 1995. Yet, New Orleans experienced its peak in 1996, and for Phoenix and Philadelphia, the trend was relatively flat throughout the 1990s.

Thus, the data on trends across cities indicate that there is no uniform association between any type of drug use and any type of crime. Rather, the trends vary greatly from place to place. The fact that the associations are sometimes positive and sometimes negative and that there are vast discrepancies across cities further supports the notion that the relationship between drug use and crime is complex.

In Birmingham, Cleveland, Dallas, and Detroit, about half of the arrestees tested positive for cocaine in 1988. Yet, in this same year, the first two cities had almost half the violent crime rate of the latter two. Similarly, in 1997, about 50 percent of the arrestees in Fort Lauderdale, Miami, and New Orleans tested positive for cocaine, but the violence rate was almost twice as high in Miami as in the other two cities. Further, in 1988 the rate of heroin use was similar in Birmingham, Cleveland, and Dallas, yet the rate of property crime in Dallas was twice as high as in Cleveland and almost four times as high as in Birmingham. Also in 1997, the rate of property crime in Miami was greater than in New Orleans, yet the heroin rate was about four times greater in the latter than the former. Thus, these variations across cities and rates suggest that drug use alone cannot explain much of the variation in either violent or property crime.

The DUF/ADAM study also includes data on methamphetamine use, and recent evidence indicates that it is increasing among arrestees (trend data are not shown but are available from the authors upon request). In 1995 overall, 6 percent of adult arrestees tested positive for methamphetamine compared with 41 percent for cocaine, 28 percent for marijuana, 8 percent for opiates, and about 2 percent for PCP (Feucht and Kyle 1996). According to the most recent data, use of methamphetamine is highest in San Diego, San Jose, Phoenix, Portland, and

Omaha—all of which report 10 percent or more of both male and female arrestees testing positive (U.S. DOJ, NIJ 1998). In fact, in San Diego (where 40 percent of males and 42 percent of females tested positive) and San Jose (where 18 percent of males and 25 percent of females tested positive), use of methamphetamine is equal to or greater than use of cocaine and opiates. As exhibit 3 shows, levels of violent and property crime remain low in these two cities relative to other DUF/ADAM sites, although the increase in methamphetamine use might change the nature of the drug-crime relationship in the near future (especially the drug-violence connection).

Thus, the data on trends across cities indicate that there is no uniform association between any type of drug use and any type of crime. Rather, the trends vary greatly from place to place. The fact that the associations are sometimes positive and sometimes negative and that there are vast discrepancies across cities further supports the notion that the relationship between drug use and crime is complex. Below we discuss theoretical explanations for this complex relationship.

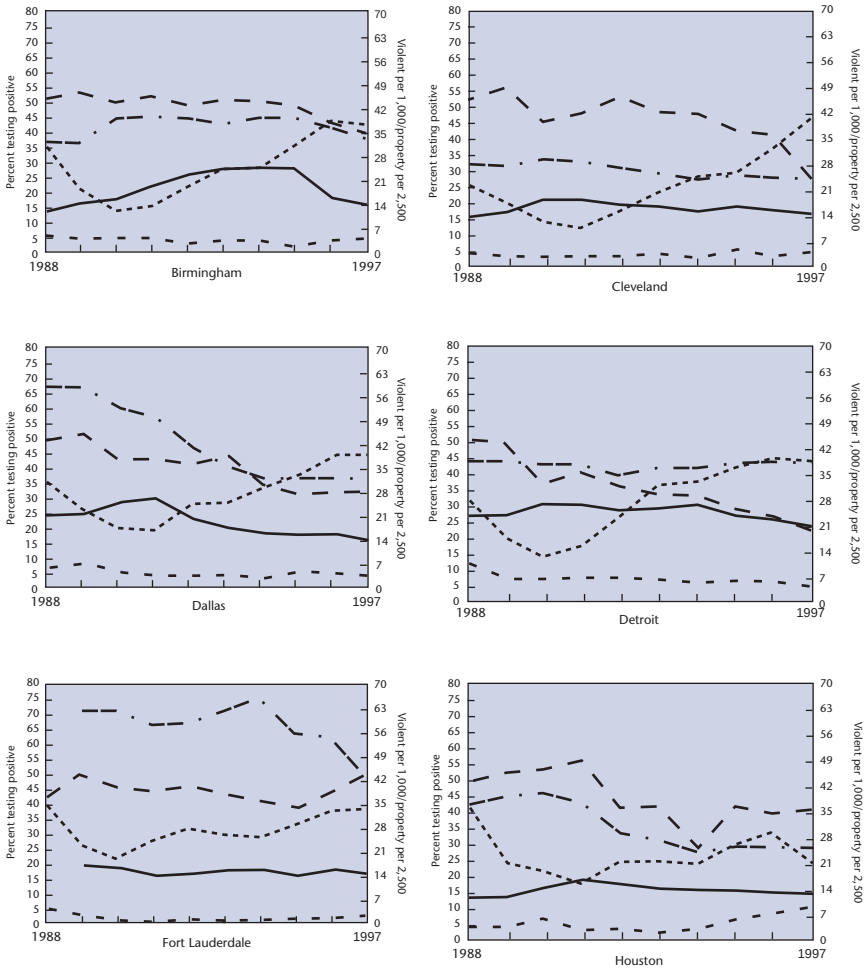
Theoretical Issues

There are three basic explanatory models for the relationship between alcohol/drug use and crime: (1) substance use leads to crime, (2) crime leads to substance use, and (3) the relationship is either coincidental or explained by a set of common causes (see White 1990). Each model may apply to different subgroups of the population of substance-using criminals or to different incidents of alcohol/drug-related crime. In the next section, we briefly describe the models and, following these descriptions, we present empirical data that both support and refute them.

Substance use leads to crime

One causal model posits that alcohol and drug use lead to crime because of the psychopharmacological properties of drugs, the economic motivation to get drugs, or the systemic violence associated with the illegal drug market (Goldstein 1985). The *psychopharmacological model* proposes that the effects of intoxication (including disinhibition, cognitive-perceptual distortions, attention deficits, bad judgment, and neurochemical changes) cause criminal (especially violent) behavior (Collins 1981; Fagan 1990). In addition, chronic intoxication may also contribute to subsequent aggression and crime, due to factors such as withdrawal, sleep deprivation, nutritional deficits, impairment of neuropsychological functioning, or enhancement of psychopathologic personality disorders (Virkkunen and Linnoila 1993). The *economic motivation model* assumes that drug users need to

Exhibit 3. Trends in drug use and crime rates by city

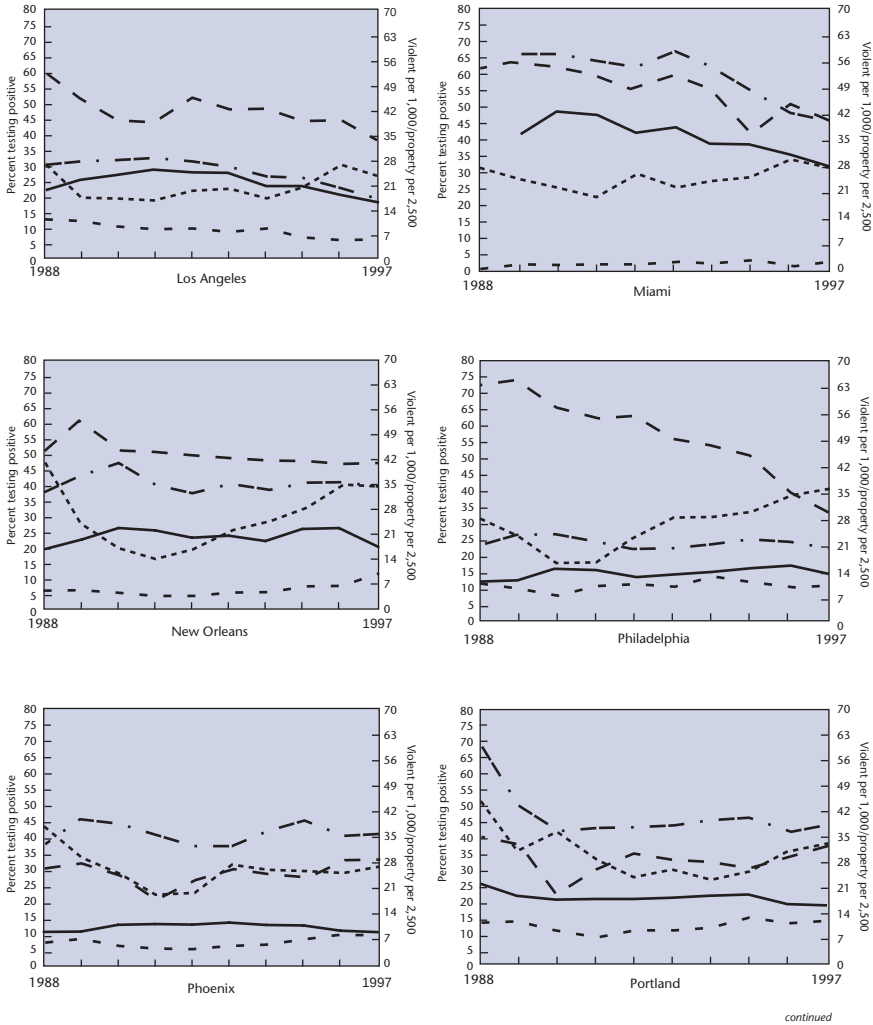


continued

Note: Violent crime rate is per 1,000 population; property crime rate is per 2,500 population.

Sources: U.S. Department of Justice, Bureau of Justice Statistics 1989–91, 1992b, 1993, 1994b, 1995–98; U.S. Department of Justice, National Institute of Justice 1998; U.S. Department of Justice, National Institute of Justice 1989–97.

Exhibit 3 (continued)

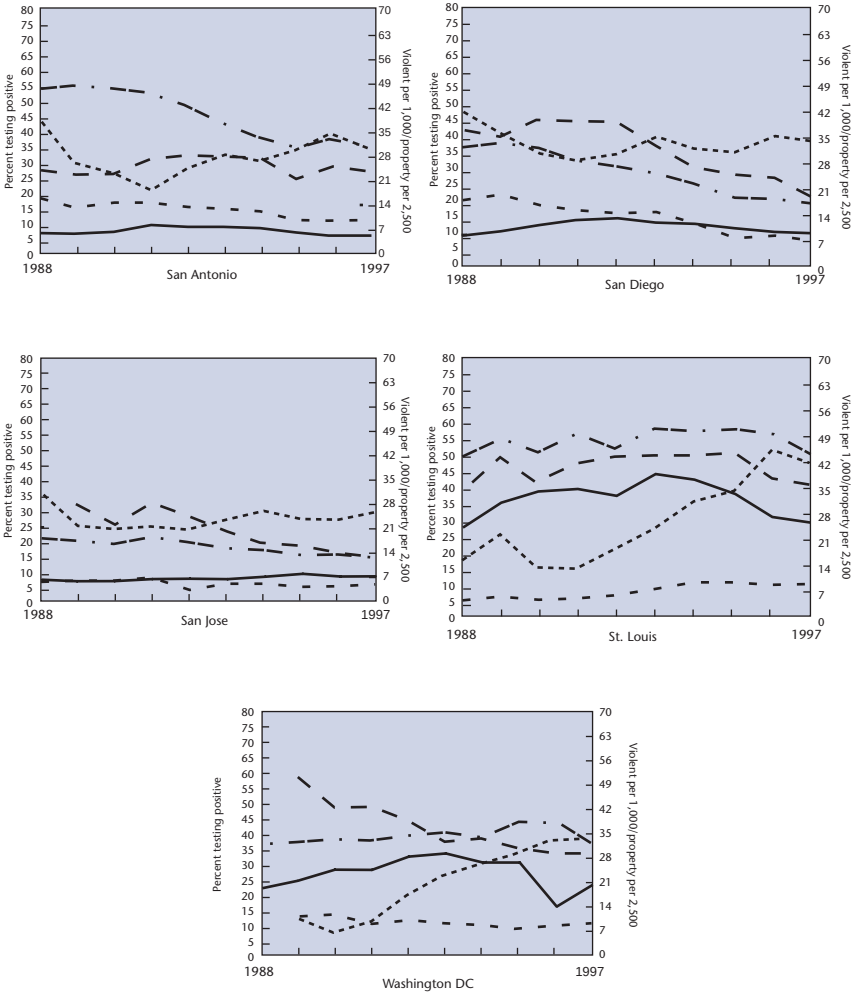


continued

Note: Violent crime rate is per 1,000 population; property crime rate is per 2,500 population.

Sources: U.S. Department of Justice, Bureau of Justice Statistics 1989–91, 1992b, 1993, 1994b, 1995–98; U.S. Department of Justice, National Institute of Justice 1998; U.S. Department of Justice, National Institute of Justice 1989–97.

Exhibit 3 (continued)



Note: Violent crime rate is per 1,000 population; property crime rate is per 2,500 population.

Sources: U.S. Department of Justice, Bureau of Justice Statistics 1989–91, 1992b, 1993, 1994b, 1995–98; U.S. Department of Justice, National Institute of Justice 1998; U.S. Department of Justice, National Institute of Justice 1989–97.

generate illicit income to support their drug habit. Thus, they engage in crimes such as robbery, burglary, and prostitution to get drugs or the money to buy them.

During the 1980s, attention began to focus on the *systemic model* (Goldstein 1985), which posits that the system of drug distribution and use is inherently connected with violent crime. Systemic types of crimes surrounding drug distribution include fights over organizational and territorial issues, enforcement of rules, punishments of and efforts to protect buyers and sellers, and transaction-related crimes (such as robberies of dealers or buyers, assaults to collect debts, and resolution of disputes over quality or amount) (Miczek et al. 1994). In addition, there is often third-party violence, such as bystander shootings or assaults on prostitutes who sell drugs. Further, drug markets can create community disorganization, which, in turn, affects the norms and behaviors of individuals who live in the community. Such community disorganization may be associated with increases in crime that are not directly related to drug selling (Blumstein 1995b; Fagan and Chin 1990; Skogan 1990).

Crime leads to substance use

This model is based on the assumption that deviant individuals are more likely than nondeviant individuals to select or be pushed into social situations and subcultures in which heavy drinking and drug use are condoned or encouraged. According to this explanation, involvement in a criminal subculture provides the context, the reference group, and the definitions of a situation that are conducive to subsequent involvement with drugs (White 1990). For example, rather than the need for a drug compelling an individual to commit robbery, the income generated from a robbery might provide the individual with extra money to secure drugs and therefore place the individual in an environment that supports drug use (Collins, Hubbard, and Rachal 1985). It has also been suggested that several aspects of the professional criminal lifestyle are conducive to heavy drinking and drug use, such as working periodically, partying between jobs, being unmarried, and being geographically mobile (Collins and Messerschmidt 1993). In addition to subcultural and lifestyle explanations, it has been proposed that deviant individuals may use drugs in order to self-medicate (Khantzian 1985) or to give themselves an excuse to act in a deviant manner (Collins 1993).

It is also possible that both of the above models are correct and that the relationship between substance use and crime is reciprocal. That is, substance use and crime may be causally linked and mutually reinforcing and, thus, drinking and drug use may lead to more criminal behavior and criminal behavior may lead to more drinking and drug use (Collins 1986; Fagan and Chin 1990). For example, when an addict has an easy opportunity to commit robbery, he or she will commit

it and then buy drugs with the money gained, not out of a compulsion but rather as a consumer expenditure. Conversely, when the need for drugs is great, users will commit crimes to get money to buy drugs (Goldstein 1981; see also Chaiken and Chaiken 1990).

For example, young males account for a disproportionate share of crime and are also the heaviest drinkers and drug users; being male is the common link (whether due to biological or social factors).

The relationship is due to common causes

The common cause model postulates that substance use and crime do not have a direct causal link. Rather, they are related because they share common causes (such as genetic or temperamental traits, antisocial personality disorder, parental alcoholism, and poor relations with parents) (White 1990; White, Brick, and Hansell 1993). For example, young males account for a disproportionate share of crime and are also the heaviest drinkers and drug users; being male is the common link (whether due to biological or social factors). In addition, subcultural norms may reinforce both criminal behavior and substance use. That is, certain subcultures (e.g., youth gangs) may promote both crime and drug use as proof of masculinity, which would spuriously inflate the relationship between these two behaviors (Fagan 1990; see Gorman and White 1995 for a review of peer influences on drug use and delinquency).

In addition to such individual-level and interpersonal-level influences, drug use and crime may have common environmental and situational causes. Research shows, for example, that rates of violent crime and delinquency are high in neighborhoods that are poor, densely populated, racially segregated, and composed of a transient population (Bursik 1988; Sampson, Raudenbush, and Earls 1997). Social disorganization and lack of social capital appear to be the crucial mechanisms linking these structural characteristics to crime (Skogan 1990). Exposure to drugs and sustained drug use are also more common among residents of disadvantaged and disorganized neighborhoods, probably because the illicit drug market is concentrated in such communities (Ensminger, Anthony, and McCord 1997). Available research does not indicate the exact nature of the relationship between drug use, crime, and social deprivation and disorder, although it is fairly clear that these factors interact in many poor urban environments to create a spiral of decline in which each problem is amplified over time (Skogan 1990).

Certain types of places and situations also generate both greater rates of drug use and crime. For example, crime rates are high when and where people (especially young males) are drinking, such as at bars and sports stadiums, and at night and on weekends (Fagan 1993b). Proponents of the routine activities perspectives argue that bars are crime hot spots because they bring together motivated offenders and suitable targets in the absence of effective guardianship (Roncek and Maier 1991). Thus, situational factors such as location, access, and type of clientele contribute to a spurious relationship between alcohol use and crime (for greater detail, see Fagan 1993b).

In the following section, we examine empirical data that support or refute these theoretical models.

Empirical Research on the Association Between Drug Use and Crime

Degree of association

In a meta-analysis of cross-sectional studies examining the alcohol-violence relationship, Cohen et al. (1994) found significant, although very modest, effect sizes for both acute and chronic associations. They also found that the associations between alcohol and violent crime were weaker than those between alcohol and nonviolent crime. The relationships were stronger in criminal and psychiatric samples than in general population samples. Further, when studies controlled for confounding variables, the alcohol-violence correlation was reduced substantially. Thus, Cohen and colleagues concluded that the association between alcohol and violence probably represents a relationship that is confounded by other factors such as sociodemographic and personality characteristics (see also Lipsey et al. 1997). The meta-analysis identified weak associations between alcohol use and violence across time: the average correlation between Time 1 alcohol use and Time 2 violence was 0.01, and between Time 1 violence and Time 2 alcohol use, 0.09 (suggesting that violence was more strongly related to later alcohol use than alcohol use was to later violence).

A similar meta-analysis on marijuana use and delinquency by Derzon and Lipsey (1999) found that individuals who used marijuana were more likely than those who did not to concurrently engage in nonviolent delinquency. However, prior marijuana use did not increase the risk of later violent or nonviolent delinquency. On the other hand, prior delinquency was related to later marijuana use. The strongest relationships between marijuana and aggression occurred in early adolescence, but the analysis did not find a consistent relationship between marijuana and aggressive delinquency after early adolescence. Derzon

and Lipsey (1999) concluded that use of marijuana does not establish a developmental trajectory to aggressive behaviors.

Studies examining the association between various stages of drug use and delinquency have reported a high degree of synchrony in the progression. Abstainers and alcohol-only users are most likely to be nondelinquents; compared with only alcohol users, those who use both alcohol and marijuana are more likely to be delinquent; and those who progress to the use of other drugs, compared with those who do not, are most likely to also progress to involvement in more serious forms of delinquency (Elliott, Huizinga, and Menard 1989; Fagan et al. 1987; Fagan, Weis, and Cheng 1988; White, Johnson, and Garrison 1985). Yet, these types of analyses have also indicated that there are several heterogeneous groups of adolescents; for some, drug use and delinquency are closely related, and for others they are independent of each other (see Fagan et al. 1987; White, Pandina, and LaGrange 1987; White and Labouvie 1994)

In examining the degree of association between crime and drug use, it must be recognized that only a small group of individuals are criminal offenders and heavy drug users. For example, in a nationally representative sample of youths, it was found that less than 5 percent of all youths reported committing serious crimes and using hard drugs.

In addition, these typological studies indicate that the strength of the associations between substance use and delinquency depends on the severity of the delinquency and the types of substances used (Fagan et al. 1988), as well as the age, sex, and nature of the sample examined (Huizinga and Jakob-Chien 1998). Further, some studies report an asymmetry in the relationship (for a review, see White 1990). White et al. (1999) found that delinquency increased as drug use became more serious, but that drug use was not related to seriousness of offenses. Among both males and females, Huizinga and Jakob-Chien found that many serious offenders were not serious drug users and that most did not have drug problems. In contrast, as many as two-thirds of the male problem drug users were also serious offenders. Huizinga and Jakob-Chien (1998) argued that the fact that most serious delinquents are not serious drug users calls into question the existence of a single-problem behavior syndrome. In contrast, White, Pandina, and LaGrange (1987) found that the majority of serious delinquents were also serious drug users, whereas only one-third of the serious drug users were also serious delinquents. The difference in findings between these two studies probably reflects variations in the nature of samples and historical changes in drug use.

Statistics on the rates of alcohol use by offenders at the time of an offense provide strong support for the alcohol-violence relationship. Although the rates vary greatly across studies, they generally indicate that more than half of all homicides and assaults are committed when the offender, victim, or both have been drinking.

Studies of adult populations also support a progressive relationship between frequency of drug use and amount of crime, especially during periods of addiction versus nonaddiction (Chaiken and Chaiken 1990) (see the section on the economic motivation model). For example, Johnson and colleagues (1985) found that among street opiate users, daily users, compared with nondaily users, committed more drug-related and nondrug-related crimes. In addition, Inciardi and Pottieger (1998) found that heroin users, compared with other criminal offenders, committed more crimes and more serious types of crimes and were involved in a greater variety of offenses.

In examining the degree of association between crime and drug use, it must be recognized that only a small group of individuals are criminal offenders and heavy drug users. For example, in a nationally representative sample of youths, it was found that less than 5 percent of all youths reported committing serious crimes and using hard drugs. This small group accounted for approximately half or more of all serious offenses and 60 percent of all occasions of hard drug use (Johnson et al. 1986). Similarly, among street opiate users, criminal offenders who committed at least one crime per week also committed the majority of all crimes, regardless of type (Lipton and Johnson 1998). Inciardi and Pottieger (1991) found that 254 crack-using youths in Miami accounted for more than 200,000 criminal offenses in 1 year. It should be noted, however, that 61 percent of these offenses were drug related (e.g., drug possession and distribution).

Statistics on the rates of alcohol use by offenders at the time of an offense provide strong support for the alcohol-violence relationship. Although the rates vary greatly across studies, they generally indicate that more than half of all homicides and assaults are committed when the offender, victim, or both have been drinking (see Collins and Messerschmidt 1993; Roizen 1993). About 40 percent of adults in local jails and State prisons in 1996 reported committing a violent crime, and about one-third of that group reported committing a property crime while drinking (Greenfeld 1998). In one study, however, though more than 50 percent of the assaultive offenders reported drinking at the time of their offense, 59 percent of those drinking did not think that drinking was relevant to the commission of the crime (Collins and Messerschmidt 1993). In a study of incarcerated offenders, Collins and Schlenger (1988) concluded that it was acute

episodes, rather than chronic patterns of alcohol use, that better predicted violent offending. Yet, a recent study by Zhang, Wieczorek, and Welte (1997) found that although usual drinking pattern was not related to the prevalence of assault, once other moderating variables were controlled, usual drinking pattern and acute use of alcohol preceding an assault were both independently related to frequency of assault.

In 1996, more than one-third of jail inmates reported that they were under the influence of drugs at the time of their offense (Harlow 1998). The primary drugs were marijuana/hashish and cocaine/crack. Among local jail inmates in 1996, 60 percent were under the influence of alcohol only (25 percent), drugs only (20 percent), or both (16 percent) at the time of their offense. The overall percentages were the same for property and violent crimes, although more violent crime than property crime was committed under the influence of alcohol alone (27 percent versus 18 percent), and more property crime than violent crime was committed under the influence of only drugs (21 percent versus 14 percent) (Harlow 1998). Based on DUF data, Valdez and colleagues (Valdez, Yin, and Kaplan 1997; Valdez et al. 1995) reported that the relationship between arrests for aggressive crime and substance use was in the opposite direction for alcohol compared with illicit drugs. Arrests for aggressive crimes were more strongly related to reports of frequent alcohol use than to testing positive for illicit drugs. In fact, persons who tested positive for illicit drugs were less likely to be involved in aggressive crime than those who tested negative. Kouri and colleagues (1997) found that 53 percent of State prison inmates in Massachusetts reported that their drug use played a significant role in the commission of the crime for which they were incarcerated. Further, almost all the inmates had been incarcerated at some time for a crime related to drug use.

Across various cities in the United States, about one-fourth to one-half of all homicides are drug related (U.S. DOJ, BJS 1992a). Drug-related homicides appear to involve young (late teens through twenties) men, especially African-Americans and Hispanics (Blumstein 1995b; U.S. DOJ, BJS 1992a). Further, about half of all victims of homicide have drugs (usually cocaine or a cocaine metabolite) in their body (U.S. DOJ, BJS 1992a). Spunt and colleagues (1994) interviewed prison inmates in New York State and found that about one-fifth of all homicides were reported to be related to alcohol use, although in about half of these cases, the respondent was also high on another drug (usually marijuana). Inciardi (1990b) found large variations across cities in terms of increases and decreases in homicide rates from 1985 through 1989. He thus concluded that homicide rates are not associated with rates of crack use and crack distribution and that the association between crack use and violence varies by location.

Victimization studies also provide empirical support for the alcohol-violence relationship, although the rates vary considerably. Pernanen's (1991) study in Thunder Bay, Canada, showed that 54 percent of all violent incidents (which included nonserious types of violence such as pushing and shoving) were alcohol-related. In contrast, data from NCVS indicate that only 28 percent of all violent crimes are alcohol related (Gramckow et al. 1995).

Gender, age, and ethnic differences in the nature of the drug-crime relationship have been observed. Rates of alcohol-related violent offenses appear to be higher for males than for females and highest in the 20- to 30-year-old age group, as compared with younger or older samples (Collins and Messerschmidt 1993). Gender by age interactions are also noteworthy (Nunes-Dinis and Weisner 1997). Although some research indicates that drug-related violence is increasing for women, there is debate as to whether rates are actually increasing or whether official labeling of females is increasing (Goldstein 1989). In a recent study of arrestees in California, gender was not a significant predictor of violent offenses when alcohol and drug use and demographic variables were controlled (Nunes-Dinis and Weisner 1997). Further, this study found no significant differences between men and women in the proportion charged with violent, drug-related, or alcohol-related offenses.

The data on ethnic differences in the drug-crime association are inconsistent and indicate complex gender-by-ethnicity interactions (Collins and Messerschmidt, 1993). Wieczorek, Welte, and Abel (1990) reported that more males than females, and more whites than blacks, were under the influence of alcohol at the time they committed a homicide. In contrast, the rate of those under the influence of illicit drugs was consistent across genders and races. Valdez and colleagues (1995) identified a moderating effect of ethnicity on the drug-crime relationship among male DUF arrestees in San Antonio. Whites were more likely to be involved in aggressive crimes than Mexican-Americans. Further, the combined use of alcohol and drugs was more strongly associated with aggressive crimes for Mexican-Americans than for whites, whereas the use of alcohol alone was more strongly associated for whites (see also Valdez et al. 1997). For both whites and Mexican-Americans, heavy drinkers were just as likely to commit property crimes as violent crimes. Although several researchers have found ethnic differences in the association between drug use and crime, others have not (e.g., Inciardi and Surratt 1998).

Research on arrested adolescent offenders indicates that they also report being under the influence of alcohol and drugs when they commit crimes (Collins 1993). In 1993, 8 percent and 10 percent, respectively, of all youths in custody in State institutions reported that they were under the influence of

only alcohol when they committed a violent or a property crime (U.S. DOJ, BJS 1994a). Similarly, 12 percent committed a violent offense and 17 percent a property crime while under the influence of only drugs. Approximately one-fourth committed property or violent crimes while under the influence of both drugs and alcohol.

In contrast, data from community samples of adolescents do not provide strong support for a direct association between alcohol/drug use and violence (Carpenter et al. 1988; White 1997b). In a national sample of adolescents, Elliott, Huizinga, and Menard (1989) examined self-reports of the use of alcohol and drugs immediately prior to commission of index offenses. They found no relationship between acute drug use and property or violent crime. For alcohol, however, they found a definite relationship for sexual assaults and a probable relationship for aggravated assaults. However, the association between alcohol use and violent crime was stronger in young adulthood than in adolescence, suggesting that the nature of the relationship may change over the life course. After a review of the literature on alcohol, drugs, and violence among youths, Osgood (1994) concluded that there was little evidence that substance use makes an independent contribution to adolescent violence.

In addition to individual-level analyses, support for an alcohol-violence association comes from macro-level studies of the relationship between alcohol availability and rates of violence. Rates of homicide and other forms of violence have been related to alcohol availability and per-capita consumption in international as well as in U.S. State comparisons, although the strength of the relationship is reduced when other variables, such as poverty, are controlled (Parker 1993). Further, efforts to reduce drinking (e.g., by increasing the tax on alcohol) have been shown to decrease violent crime (Cook and Moore 1993).

It is generally recognized that the relationship between alcohol availability and crime is best studied using small geographic areas no larger than cities (Scribner et al. 1999). Using city-level data, Parker and Rebhun (1995) found that increases in alcohol availability helped explain why the homicide rate tripled between 1960 and 1980. They found that the homicide rate was positively related to beer consumption and negatively related to increases in the minimum drinking age. A recent study of cities in Los Angeles County found that 70 percent of violent crime could be explained by a community's sociodemographic characteristics, but that an additional 7 percent of the variability in violent crime could be explained by alcohol outlet densities (Scribner, MacKinnon, and Dwyer 1995). However, these findings were not entirely replicated in a study of more than 200 New Jersey municipalities: Alcohol outlet densities did not significantly contribute to violent crime rates after controlling

for the same sociodemographic characteristics (Gorman et al. 1998). In a further study focused on the relationship between alcohol outlet density and violence within a single New Jersey municipality, alcohol outlet density was found to be the best predictor of violent crime (Speer et al.1998). Alcohol outlet density was also a significant predictor of neighborhood variations in the level of violent crime in studies conducted in several other U.S. cities (Alaniz, Cartmill, and Parker 1998; Roncek and Pravatiner 1989; Roncek and Maier 1991; Scribner et al. 1999; Sherman, Gartin, and Buerger 1989).

Overall, this research suggests that moderate restrictions on alcohol availability may reduce violence (Cook and Moore 1993). However, Lipsey and colleagues (1997) argue that the existing studies do not establish a causal relationship because the findings have been equivocal, there is uncertainty about what other variables should be controlled, and the full range of possible confounding factors has not been examined. Moreover, even if a causal relationship between outlet density and rates of violence were to be established, the underlying mechanism would also need to be specified before policies could be developed. For example, the association between alcohol availability and violent crime may be due to the effects of alcohol on individuals' psychological functioning: The more outlets there are in a community, the greater the number of people drinking and therefore subject to the cognitive effects of alcohol (see section on the pharmacological model). Alternately, it may be the drinking context—principally, drinking in public places—that explains the association between alcohol availability and violence. From this perspective, alcohol itself plays a relatively minor role; rather, it is the features of bars and other drinking places that matter (for a discussion of these features, see Graham, Schmidt, and Gillis 1996).

Temporal ordering

Studies of developmental trajectories of drug use and crime indicate very different patterns. That is, onset of delinquency peaks in mid-adolescence and then declines dramatically after age 18. On the other hand, illicit drug use usually begins in mid-adolescence, and initiation of some substances continues into young adulthood (Elliott, Huizinga, and Menard 1989; Kandel and Logan 1984). Elliott and colleagues (1989) found that rates for serious delinquency decreased by 70 percent as their sample aged from adolescence to young adulthood. On the other hand, rates for polydrug use increased by 350 percent during this same time period.

Researchers have examined the temporal order between various stages of drug use and delinquency. Elliott and colleagues (1989) found that, among subjects who initiated delinquency and polydrug use, minor delinquency almost always

came first and, in fact, no one initiated marijuana or polydrug use before minor delinquency. Alcohol use came second, although a substantial percentage of subjects initiated Index offenses prior to alcohol use. In general, however, alcohol use was followed by marijuana use, then Index offending, and, finally, polydrug use. Among subjects who initiated both marijuana use and Index offending, Index offending was more likely to precede marijuana use than vice-versa. Elliott and colleagues (1989) note, however, that whereas delinquency is more likely to influence the onset of drug use than the reverse, serious drug use (repeated polydrug use) is more likely to influence the maintenance of serious delinquency. In other words, if drug use does influence delinquency, it may be by reducing the probability of terminating, rather than increasing, the probability of initiating delinquent behavior (Chaiken and Chaiken 1990; Shannon 1998).

Research on the long-term association between drug use and crime presents mixed findings. Farrington (1995) found that males who were aggressive in childhood or adolescence were more likely to be heavier drinkers and drug takers in adulthood. He suggested that this continuity is probably not specific to aggression, but rather it is part of a general continuity in antisocial behavior from childhood to adulthood. White, Brick, and Hansell (1993) found that, among adolescent males, early aggressive behavior compared with alcohol use was a better predictor of later alcohol-related aggression. Their findings suggested that males who engage in alcohol-related aggression are aggressive from early adolescence and behave aggressively whether or not they use alcohol. Alternatively, a study of juvenile offenders in Finland found that those juveniles who had arrests for drunkenness were more likely to have arrests for violent crimes 5 to 10 years later (Virkkunen 1977). In another study of adolescent offenders, Dembo and colleagues (1991) also found that alcohol use predicted violent offending approximately 1 year later.

Recently, White and Hansell (1998) examined the acute and long-term associations between alcohol, marijuana, and cocaine use and aggression from early adolescence into adulthood. Overall, their results suggested that the long-term and acute relationships between aggression and drug use vary by drug type and stage of the life cycle. For example, whereas alcohol use was not significantly related to later aggressive behavior at any age, both marijuana and cocaine use in middle to late adolescence were significantly related to increased aggression in adulthood. In complement, Kaplan and Damphousse (1995) found that drug use in adolescence predicted increased aggression in adulthood, although the predictive utility was weak. Kandel, Simcha-Fagan, and Davies (1986) found that among males, early delinquency predicted later drug use, but early drug use did not predict later delinquency. For females they found that illicit drug use in adolescence predicted delinquency in adulthood. A recent structural

equation model test using high-risk samples found that current alcohol and cocaine use had a direct effect on increased criminality, whereas marijuana use did not (Yu and Williford 1994). In addition to these drug type differences, longitudinal studies suggest that there are gender and age differences that affect the long-term associations between drug use and delinquency (Friedman et al. 1996; White and Hansell 1996; White et al. 1999).

In sum, longitudinal studies that have examined the temporal associations between drug use and criminal behavior report mixed findings. Most studies have found that early aggression and delinquency predict later alcohol problems, yet the findings are equivocal as to whether early alcohol use predicts later aggression. Many studies have found that early drug use predicts later aggression and crime. Further, longitudinal research indicates that initiation into delinquency precedes drug use; however, changes in drug use affect changes in criminal behavior. Although the data indicate that, for most people, aggressive behavior precedes initiation into drug use, it does not mean that acute or chronic use of drugs does not lead to subsequent violent behavior. The data supporting a causal relationship will be reviewed separately for the psychopharmacological, economic motivation, systemic, and common cause models.

Is the Association Between Drug Use and Crime Causal?

The psychopharmacological model

The psychopharmacological model has gained greater support in the alcohol literature than in literature about other drugs. Support for this model comes from laboratory studies of animals and humans. Although studies of animals demonstrate that low to moderate doses of alcohol increase aggressiveness, there are many problems in generalizing from animal aggression to human violence (see Miczek et al. 1994). Here we discuss only studies of humans.

Controlled laboratory studies have consistently found that acute intoxication by alcohol (below sedating levels) is related to aggression when the subject is provoked (Bushman 1997). However, it has also been demonstrated that the relationship between alcohol use and aggression is moderated by subject characteristics (e.g., gender, aggressive tendencies, cognitive abilities), experimental design conditions (e.g., provocation, nonaggressive response alternative, peer pressure, normative standards), and beverage characteristics (e.g., dose, type) (Gustafson 1993; Pihl, Peterson, and Lau 1993; Ito, Miller, and Pollock 1996; Chermack and Giancola 1997). In a recent meta-analysis, Bushman (1997) reported that increased aggression under conditions of alcohol intoxication in

the laboratory cannot be explained by either physiological disinhibition of alcohol or alcohol expectancies. Rather, alcohol increases aggression by causing changes within the person that increase the risk for aggression, such as reduced intellectual functioning, reduced self-awareness, and inaccurate assessment of risks. These same alcohol-induced changes may put a person at risk for nonaggressive crimes, although less research and theorizing has been applied to psychopharmacological explanations for property crime. Numerous biological and neuropsychological mechanisms have been proffered to explain how alcohol use increases the risk of violence (for greater detail, see White 1997a; Miczek et al. 1994; Pihl, Peterson, and Lau 1993; Fagan 1990; Parker and Auerhahn 1999). (For a review of laboratory studies and theoretical explanations for the association between alcohol and aggression, see Bushman 1997; Ito, Miller, and Pollock 1996; Chermack and Giancola 1997; Lipsey et al. 1997; Parker and Rebhun 1995. For a review of the methodological issues in laboratory research, see White 1997a.)

The psychopharmacological explanation for the drug-violence association has largely been refuted in the literature with regard to heroin and marijuana, but it has received strong support with regard to barbiturates and tranquilizers. (For an extensive review of specific drug effects on aggression in animals and humans, see Miczek et al. 1994; see also Parker and Auerhahn 1998). Laboratory studies indicate that marijuana and opiates have the opposite effect of alcohol in that moderate doses temporarily inhibit aggression and violence, although withdrawal from opiates increases aggression. There is some research to indicate that chronic use of marijuana, opiates, and amphetamines increases the risk of violent behavior (Miczek et al. 1994). No conclusive evidence supports a direct association between cocaine use and violence (Miczek et al. 1994). As well, there has been no evidence (except anecdotal and small samples) that acute use of PCP (phencyclidine) and LSD (lysergic acid diethylamide) is associated with violent behavior, except when use enhances already existing psychopathology (Miczek et al. 1994; see also Fagan 1990; Parker and Auerhahn 1998). Similarly, cocaine and amphetamine use can increase paranoia, which might result in violence. However, the intoxicating effects of all of these drugs account for very little drug-related violent crime. It is also possible that drug and alcohol use may interact to affect violent behavior (Denison, Paredes, and Booth 1997).

In a study of drug-related homicides in New York City, only 14 percent were classified as psychopharmacological. Whereas all homicides committed while the offender was under the influence of alcohol but no other drug were classified as psychopharmacological, few such cases involving the use of another drug without alcohol were so classified (Goldstein et al. 1989). Fendrich and colleagues (1995) found that the association between alcohol use and homicide

held true for both juvenile and adult offenders, with about one-third of the offenders reporting that they had used alcohol prior to committing the offense.

As in other areas, there are important gender, ethnic, and age differences found in the research. Studies that have examined the role of alcohol and other drugs in violent crime indicate that the psychopharmacological model predominates for females and that the predominant drug is alcohol (Spunt et al. 1990). Further, men who are killed by women often have alcohol in their blood at the time of death (Parker and Auerhahn 1999). Interestingly, alcohol and drugs appear to play a greater role in homicides of intimates than nonintimates among women than with men (Parker and Auerhahn 1999). Alcohol is also the predominant drug in the psychopharmacological model for males, although the systemic model is predominant (Spunt et al. 1990) (see later discussion). Goldstein (1989) found that Hispanics, compared with whites and blacks, had the strongest association between alcohol use and psychopharmacological violence, although alcohol was the drug most often associated with psychopharmacological violence for all three ethnic groups.

The psychopharmacological model has received little support in the adolescent literature (Carpenter et al. 1988; White 1990). However, in one study of adolescents who were adjudicated for a violent crime, more than half said that taking alcohol or drugs contributed to their violent acts, and almost half of them had used either alcohol or drugs immediately prior to their adjudicated violent offense (Hartstone and Hansen 1984). Note, however, that the rates were higher for other drugs than for alcohol. Further, in a study of incarcerated adolescents, it was found that more than two-thirds of the incidents of physically assaultive crime involved acute drug intoxication (Tinklenberg et al. 1981). Almost all of the cases of acute intoxication involved alcohol either alone or in combination with another drug. Similarly, a large majority of the drug-related sexually assaultive crimes involved alcohol use. On the other hand, marijuana use was underreported in offenses against persons. It is possible in both these studies that arrested juveniles overreported alcohol or drug use prior to their offense in order to justify their behavior.

In sum, the psychopharmacological model appears relevant for explaining a potential causal relationship between alcohol and violence among adults but little of the relationship between drugs and crime. However, after a thorough review of the existing literature, Parker and Auerhahn (1998) concluded that the social environment is a more powerful contributor to violence than are the pharmacological effects of any drug, including alcohol.

Economic motivation model

Support for the economic motivation model comes from literature on heroin addicts, which indicates that raising or lowering the frequency of substance use among addicts raises or lowers their frequency of crime, especially property crime (e.g., Nurco et al. 1984, Chaiken and Chaiken 1990; Anglin and Perrochet 1998). In addition, criminal activity is significantly greater following addiction to drugs than before addiction (Nurco et al. 1988). Although heroin use may not initiate crime, addiction is often a key point in the acceleration of an existing criminal career (Chaiken and Chaiken 1990). For those already criminally involved prior to addiction, the addiction increases their criminal activities only somewhat. However, for those not seriously involved with crime prior to addiction, there is a much sharper increase in criminal activity related to addiction status. Thus, for addicts with little prior criminal involvement, the data support an economic motivation model; for those with heavier criminal involvement, the data support a common cause model (Nurco 1998).

Containment of heroin use through treatment and close supervision appears to lead to dramatic reductions in both drug use and crime (Inciardi and Pottieger 1998). But recent research suggests that there are individual differences in the effects of treatment on reducing crime. Nurco and colleagues (1988) found that a reduction only occurred for individuals with previously low levels of criminal activity. Those individuals with criminally derived incomes (i.e., those who did not commit crimes only to get money for drugs) prior to treatment, remained criminally active after treatment (see also Lipton and Johnson 1998). Further, there appear to be ethnic/racial differences in the effects of treatment on crime reduction (Nurco et al. 1988).

All of this research points to the need to differentiate among different types of drug users when studying the drug-crime association. Some addicts are criminal prior to, and regardless of, their drug use, although their crime rates may increase during heightened periods of addiction. Eliminating their drug use would probably reduce, but not necessarily eliminate, their criminal behavior. Other addicts become involved in crime as a result of their addiction. Eliminating their drug use would probably also eliminate their criminal behavior. Finally, there are some addicts who avoid criminal activities (except, of course, illegal drug possession and use) altogether (see Byqvist and Olsson 1998; Nurco 1998; Waldorf 1998). Reducing drug use among this group would have no effect on rates of crime. In fact, most drug users, and even some drug addicts, do not commit crimes, especially when one excludes drug dealing (Chaiken and Chaiken 1990; Hunt 1990). Just as there are many types of criminals and noncriminals among drug users, there are also many types of drug users and nonusers among criminals (Inciardi and Pottieger 1998; Chaiken and Chaiken

1990; Hunt 1990). Nevertheless, among criminals, those who are frequent drug users are likely to be frequent offenders and use many kinds of drugs regardless of sex, race/ethnicity, age, and place of residence (Chaiken and Chaiken 1990).

Anglin and Perrochet (1998) have argued that the association between drugs and property crime is not universal. That is, in countries such as Britain and the Netherlands, where drug maintenance and treatment are provided by the government, there are much lower levels of property crime attributed to narcotics use. Further, as Waldorf (1998) noted, social class will affect the drug-crime relationship. Not only will income affect whether crimes are committed, but drug users who are poor will have higher arrest and conviction rates. The nature of economically motivated crime also varies by type of drug use. In one study of cocaine-heroin users, robbery was associated with cocaine use, but not with marijuana, pill, or alcohol use before, during, or after crime commission (Lipton and Johnson 1998).

The fact that treatment reduces income-generating crimes rather than all crimes supports the economic motivation model (Anglin and Perrochet 1998). In contrast, self-report data do not provide equivocal support for an economic motivation theory. In 1997, only 16 percent of jail inmates reported having committed a crime to get money for drugs, and more property (26 percent) crimes than violent (9 percent) crimes were committed to get money for drugs (Harlow 1998). Data from adult inmates have shown that only about one-fourth cite drug involvement as their main reason for first becoming involved in crime (Chaiken and Chaiken 1990). Also, in a study of homicides in New York City, only 4 percent of all drug-related homicides were classified as economically motivated (Goldstein et al. 1989), and cocaine was the drug most often associated with economically motivated homicides (see Lipton and Johnson 1998). Goldstein (1989) found a stronger association between heroin use and economically motivated crimes for Hispanics than for blacks or whites.

Studies of female addicts suggest that they tend to commit primarily nonviolent income-generating crimes, especially prostitution, drug selling, and shoplifting (Chaiken and Chaiken 1990; Datesman 1981), although female drug users engage in a variety of crimes (Erickson and Watson 1990; Sommers and Baskin 1993). Not only do women engage in prostitution to get money for drugs, they often barter sex for drugs (Goldstein, Ouellet, and Fendrich 1992). Much of the research on prostitution, similar to research conducted on other criminal behavior among male and female drug abusers, suggests that many prostitutes committed crimes prior to becoming addicted to drugs and that prostitution served as a means of making a living, not just a means of obtaining drugs. Even if these women had not previously engaged in prostitution, they had engaged in some types of criminal behavior prior to addiction (Erickson and Watson 1990;

Graham and Wish 1994). In other words, drug use does not cause prostitution; rather, individuals who are prone to drug use are also prone to criminal behavior of all kinds (Inciardi 1986).

The role of prostitution among female addicts has changed in response to variations in drug epidemics (Inciardi and Pottieger 1998). Although studies in the 1970s found that more female drug users were prostitutes than were drug dealers (see Erickson and Watson 1990), as crack selling became profitable, some women gave up prostitution in favor of dealing (Fagan 1994). Still, many women who use crack continue to be heavily involved in prostitution (Fagan 1994), and the economic motive is clear (Erickson and Watson 1990). In other words, the crack epidemic provided female prostitutes with a high-income-generating alternative to prostitution, but it also immersed female users deeper in prostitution. Goldstein and colleagues (1992) described how crack cocaine affected the drug-prostitution association by lowering the price of sex for street prostitutes, lowering the social status of cocaine, and increasing the level of social disorganization and street violence related to prostitution. Their research, however, challenges the notion that most female addicts are forced to become prostitutes. (For greater detail on the association between drug use and prostitution, see Goldstein et al. 1992; Hunt 1990; Erickson and Watson 1990.)

The economic motivation explanation has not been supported among adolescents. Intensive drug users and highly delinquent youths do not report committing crimes to raise money for drugs (Johnson et al. 1986). Adolescents in the community report committing crimes to have fun, to obtain valued goods, or to get money. They claim to be able to obtain drugs within their usual budgets and maintain that other commodities are purchased using the profits of crime (Carpenter et al. 1988; see also Altschuler and Brounstein 1991). The current involvement of many youths in the crack market may provide enough income to reduce their need for economically motivated crime.

In fact, across age groups, there appears to be much less economically motivated, predatory crime related to crack than there was to heroin in the 1970s and 1980s. The reduction in property crime since the beginning of the crack epidemic supports this view. Because there is more money in crack distribution than in previous illegal drug markets, drug dealing may have obviated the need to commit property crimes and income-generating violent crimes (Miczek et al. 1994). Thus, much of the recent research dispels the assumption of economically motivated crime, excluding drug dealing.

The major illegal activity for heroin-cocaine users is drug distribution, and this is true even for less drug-involved criminals (Lipton and Johnson 1998). The selling of crack surfaced in 1984, and by 1988, it became the most frequently

committed crime, regardless of prior drug use or criminal involvement. Further, crack became the most economically valuable drug for dealers. According to Harrison (1992a), the number of drug-dealing opportunities reduces the necessity of property crime because it provides drugs and/or alternative income. Recent research suggests that, although the crack era is in decline, crack sales have stabilized. Users are moderating their use, but crack cocaine is still a permanent part of the drug economy and community (Lipton and Johnson 1998).

We have chosen to exclude dealing as a drug-related crime and will only briefly discuss the intricacies of drug use and drug dealing (for greater detail, see Hunt 1990; Fagan and Chin 1990; Inciardi and Pottieger 1991; Johnson, Golub, and Fagan 1995; Johnson et al. 1994). It should be noted that rates of drug use vary considerably among dealers. That is, many dealers, especially at the higher levels, do not use drugs or do so moderately (Hunt 1990). In fact, for many young crack dealers, selling is an economic opportunity rather than a means of financing their own drug use (Harrison and Freeman 1998). Yet, at lower levels, most dealers use drugs. Further, many, if not most, serious drug users at some time are involved in dealing activities. Many high-frequency dealers also engage in other criminal activities. Females are often dealers (Hunt 1990; Fagan 1994), although in relation to males, fewer women participate in drug distribution (Dunlap, Johnson, and Maher 1997). Further, women's roles are mostly confined to the lower levels of the business (Dunlap et al. 1997; Erickson and Watson 1990; Johnson et al. 1995).

Studies consistently show that crack users are heavily involved in dealing, but they are also involved in nondrug criminality (Johnson et al. 1994; Inciardi and Pottieger 1994). In a study of in-custody, inner-city male adolescents, researchers found that large percentages of dealers did not use cocaine or crack, but few crack or cocaine users did not also deal (Lipton and Johnson 1998; see also Inciardi and Pottieger 1998). Johnson and colleagues (1994) compared crack abusers with other drug users and found that, in general, crack abusers used drugs at a much higher rate, were more involved in drug dealing, and had higher frequencies of nondrug crimes (except compared with heroin users). Crack selling, however, was also prevalent among cocaine snorters and marijuana users. In fact, for all illicit drug users, crack selling was the most frequent crime and generated the largest cash income. Violence was related to crack selling rather than use, and those selling in groups had higher rates of violence than those selling alone. Johnson and colleagues' (1994) findings support other research that indicates the association of crack use with violence is due to distribution rather than use. This type of violence has been labeled "systemic" and is discussed in greater detail in the next section.

The systemic model

The systemic model explains drug-related crime as resulting from negative interactions in the illegal drug market. This model probably accounts for most of the current violence related to illicit drug use, especially drug-related homicides, which increased significantly with the appearance of crack in 1985 (although they are currently declining) (Blumstein 1995b; Fagan and Chin 1990; Goldstein et al. 1989). In a 1988 study in New York City, three-quarters of drug-related (including alcohol-related) homicides were systemic. The major drug of involvement was crack, followed by powder cocaine (Goldstein et al. 1989). Only 3 of 218 homicides involved heroin. In a 1984 study of New York State (excluding New York City), the majority of drug-related homicides were found to be psychopharmacological (Goldstein 1997). Goldstein (1997) suggested that the difference in findings from the 1984 study to the 1988 study probably reflects the more rural nature and the poorer documentation in police records in the former study as well as the fact that the latter study occurred during the peak year of crack use and distribution.

Whereas most research finds that only a small proportion of females are perpetrators of systemic violence, recent studies suggest that women's roles in the illicit drug market are increasing (Erickson and Watson 1990; Johnson et al. 1995). Hence, we expect to see higher rates of drug-related systemic violence among females (see Fagan 1994; Goldstein 1989; Mieczkowski 1994). Further, women are often victims of cocaine-related violence (Goldstein 1998). Drug sellers are often victims of assaults, robberies, and homicides. In addition, police, potential witnesses, and informants are often victims of systemic violence (U.S. DOJ, BJS 1992a). With the increase of systemic violence, some studies that use law enforcement data have reported that Hispanics and blacks are more likely than whites to be perpetrators and victims of systemic violence, although findings on ethnic/racial differences are inconsistent across studies (De La Rosa and Caris 1993).

Goldstein (1997) suggested that at any given time, systemic violence is associated with whatever drug is most popular. He described the cyclical nature of the association. When the drug first increases in popularity, there is little violence, probably because there is great demand that dealers cannot meet (thereby reducing competition for customers). This stage lasts about 6 months. As the number of new users levels off, violence begins to rise. Dealers now have enough supply to meet demand, and they need to compete for territory. At this point, dealers also increase their awareness of subordinates who may be stealing money or drugs from them, leading to more violence. Finally, individuals who are heavily involved with the new drug begin to perpetrate con games to support their continued use, and these can also result in violence. Homicides increase at this point

because many dealers carry firearms and use these weapons to kill rivals or subordinates who have broken rules. Violence eventually declines as drug distribution becomes stabilized and as community norms begin to reject the behavioral excesses associated with drug use and dealing. Goldstein also pointed out that many of the individuals involved in the drug scene are violent, and some of their violent behavior serves the purpose of saving face. Thus, even if the drug scene disappeared, these same individuals would still engage in violence.

According to Goldstein (1998), he and his colleagues' research supports the prominence of the systemic model and dispels many myths about the drug-crime relationship. That is, their research indicates that very little violence is caused by individuals who are high on illicit drugs (i.e., pharmacological violence) and that little drug-related violence is economically motivated. Thus, he has claimed that public safety is not threatened by drug users who commit predatory acts to get money for drugs or who are under the influence of drugs. Yet, some robberies and the resulting assaults or homicides that have been categorized as systemic violence probably involve an economic motivation. Indeed, Parker and Auerhahn (1999) criticized Goldstein's typology for being biased toward the systemic model.

Studies conducted in the 1980s suggested that the systemic model was not applicable to the majority of youthful drug users because few were involved in distribution at a high enough level (see White 1990). More recent studies suggest that the systemic model can probably account for a significant amount of drug-related violence among youths in inner cities (Fagan and Chin 1990; Inciardi and Pottieger 1991). The crack market has attracted a younger group of sellers than previous drug markets, possibly because the demand for crack makes dealing easy and profitable, the business provides opportunities for advancement and feelings of achievement, and dealing creates a challenge for youths (Inciardi and Pottieger 1991).

Some researchers have blamed the increased violence related to drug dealing on youth gangs. In general, however, studies show that there are numerous types of gangs, many of which do not sell or use drugs (Levine and Rosich 1996). Further, dealing is equally prevalent among gang members as among nongang members (De La Rosa and Caris 1993; J. Moore 1990; Inciardi 1990b; Waldorf 1998). In addition, there are no data to suggest that drug-related activities per se increase gang violence (Levine and Rosich 1996; J. Moore 1990; Fagan 1989). According to Joan Moore (1990), increases and decreases in gang violence have little to do with drugs. (For greater detail on gangs, violence, drug use, and drug dealing, see *Free Inquiry in Creative Sociology* 1996, 1997; Klein, Maxson, and Miller 1995; J. Moore 1990.)

Van Kammen and Loeber (1994) demonstrated that previous involvement in violent crime increased the risk of drug dealing for male adolescents, as did previous involvement in property crime. Thus, individuals drawn to dealing are already violent and delinquent and, once involved in drug use or dealing, their level of violent behavior (including weapons possession) increases (see also Fagan and Chin 1990). Johnson and colleagues (1994) also found that crack use did not increase initiation rates for violent crimes such as assault, robbery, or rape. Similarly, Inciardi and Pottieger (1991) found that crack dealers, when compared with those with little or no involvement in crack sales, were younger when they began their criminal careers and had been involved in criminal activity (including sale of marijuana) prior to becoming crack dealers. However, involvement in dealing accelerated delinquency involvement. Johnson and colleagues (1990) argued that violence in the crack trade is a result of violent individuals selecting themselves for this line of work as well as being recruited into it (to provide protection, maintain discipline, and fight for turf).

Overall, the results of these studies suggest that deviant individuals are attracted to drug selling, rather than that drug selling causes individuals to become criminals. Hence, these results support a common cause rather than a direct causal model. We discuss the common cause model in greater detail in the next section.

The common cause model

Jessor and Jessor (1977) identified a problem behavior syndrome in which cigarette use, precocious sexual behavior, problem drinking, use of marijuana and other drugs, stealing, and aggression were clustered together. They found that this cluster of behaviors was explained by the same set of environmental and personality variables and was negatively related to conventional behavior. Other researchers, however, have argued that problem behaviors constitute several distinct factors rather than a single construct (for a review, see White and Labouvie 1994). Overall, the literature suggests that substance use and delinquency share several common causes or predictors, although there are also specific factors (e.g., coping style and opportunity) that determine which adolescents specialize in each behavior.

Given that problem behaviors share several common causes, the same individuals would be expected to engage in both substance use and crime. For example, many of the childhood risk factors for violence identified in the National Research Council report on violence (Reiss and Roth 1993) have also been identified as risk factors for teenage drug use and for adult alcohol and drug problems (see Hawkins, Catalano, and Miller 1992). Some of the common risk

factors are hyperactivity, impulsiveness, risk taking, inability to delay gratification, abuse or rejection in the family, lack of parental nurture, early school failure, peer rejection, social disorganization, and availability of drugs and/or weapons. However, in a study of a high-risk sample, McCord and Ensminger (1997) found that there were different predictors of alcoholism and violence. For example, early aggression and poor school attendance in the first grade predicted violence, but not alcoholism, in adulthood. Further, risk factors for alcoholism and violence differed by gender. Brook, Whiteman, and Cohen (1995) demonstrated that there are both specific and common antecedents for drug use, theft, and aggression. They examined a number of predictors from several different domains and found that drug use and theft share more similar antecedents than does aggression. Clinical and community data clearly support a comorbidity between alcohol/drug abuse and antisocial personality disorder (ASPD) (Regier et al. 1990; Collins, Schlenger, and Jordan 1988; Hesselbrock, Hesselbrock, and Stabenau 1985). The data on comorbidity suggest that individuals with ASPD are likely to be heavily involved with alcohol and drugs and that those with drug and alcohol disorders are often diagnosed with ASPD. Yet there is no evidence to show that one disorder causes the other. Rather, there may be a set of predisposing personality or temperament factors (e.g., impulsiveness) or family background factors (e.g., parental alcoholism) that may contribute to both. Some of these factors may even have a genetic basis, although more research is needed to provide conclusive evidence (Virkkunen and Linnoila 1993; Miczek et al. 1994).

Criminal justice statistics indicate that offenders are heavier drinkers and drug users than the rest of the population. Data indicate that about one-third of inmates in local jails and State prisons are daily drinkers (Greenfeld 1998). Two-thirds of the jail inmate sample drinkers and one-third to one-half of the prison sample drinkers reported having been in a treatment program for alcohol dependence. In addition, most jail inmates reported having used illicit drugs (82 percent), and two-thirds were regular users (i.e., used at least once a week for a month). The predominant drug was marijuana, although more than half reported having used cocaine or crack at any time, and 31 percent reported regular use of cocaine. Further, 42 percent of jail inmates had received substance abuse treatment (Harlow 1998). In one study of prison inmates, 56 percent were diagnosed with alcohol abuse or dependence at some time in their lives, compared with approximately 19 to 29 percent of those living in the community (Collins 1993). Kouri and colleagues (1997) used structured clinical interviews to diagnose alcohol and drug dependence among male State prison inmates in Massachusetts. They found that 95 percent of those interviewed met DSM–III–R (Diagnostic and Statistical Manual of Mental Disorders) diagnosis of abuse or dependence for at least one substance.

Similarly, recent data from the DUF/ADAM study indicate that between 51 percent (in San Jose) and 80 percent (in Chicago) of male arrestees and between 38 percent (in San Antonio) and 81 percent (in Manhattan) of female arrestees tested positive for any drug (U.S. DOJ, BJS 1998). Almost half of the males and 65 percent of the females arrested for homicide tested positive for drugs. Analyses of the DUF/ADAM data have found that more women test positive for drugs than men (Graham and Wish 1994). This gender difference could result from the fact that only the most deviant women get arrested. Data from studies of urine testing of adolescent offenders also indicate high rates of drug use (Dembo et al. 1990). These drug-testing results do not necessarily shed light on a causal relationship because these rates reflect drug use at the time of the arrest, not necessarily the time of offense. Thus, these data simply demonstrate that many criminal offenders are also drug users.

Summary of empirical research

It is obvious from the previous review of empirical research that a single model cannot account for the drug-crime relationship among all people. Rather, there are some individuals for whom the acute, and possibly chronic, cognitive effects of some drugs, such as alcohol, increase the propensity toward criminal behaviors. For others, involvement in deviant behavior weakens bonds to conventional norms and increases involvement in deviant subcultures (including the illicit drug market) that provide opportunities and reinforcement for increased deviant behavior, including drug use. Finally, for others, probably a majority, biopsychological factors (e.g., temperament) and early parent-child interactions, in combination with socioenvironmental factors, increase the risk for involvement in all types of deviant behavior.

In short, the drug-using/crime-committing population is not homogeneous; rather, it is composed of subgroups of individuals displaying different causal paths. This should come as no surprise because research has long shown that both drug users and criminals are not homogeneous groups with single developmental trajectories (Laub and Sampson 1993; Moffitt 1993; Zucker 1994). Of prime importance in this regard is distinguishing between individuals for whom the problem (whether drug use, delinquency/crime, or a combination of both) is limited to adolescence and those individuals for whom it persists into adulthood. The former type of behavior has been shown to be predicted by normal socialization processes, whereas the latter typically has an earlier onset, is more extreme in its manifestations, and is predicted by personality and behavioral variables (Labouvie and White 1998; Moffitt 1993). This developmental heterogeneity of both drug use and delinquency necessitates approaches to intervention that are developmentally appropriate, not monothematic or focused on a narrow range of risk factors (Gorman in press).

Conclusions

Several general findings have emerged from this review:

- Drug users, and even drug addicts, are heterogeneous in terms of their levels of criminality and their patterns of crime.
- Criminal offenders are heterogeneous in terms of their levels of drug use and patterns of use.
- Most drug users do not commit any crimes, with the exception of obvious drug-related crimes (i.e., possession and dealing).
- Most criminally involved male and female drug users do not specialize in only one type of crime.
- Although there are common causal factors in both alcohol/drug use and delinquent and criminal behavior, there exist various subgroups displaying different causal paths.
- For most criminally involved drug users, drug use does not cause initial criminal involvement.
- Alcohol is the drug most often associated with psychopharmacologically motivated violent crime.
- A large proportion of drug-related crime, especially violent crime, is a result of drug market forces.
- It is not the type of drug per se, but rather the economic conditions of the drug market that appear to influence the drug-crime connection.

What is especially obvious from this review is the fact that there is substantial variation in all of the issues surrounding drug use and crime. Thus, stereotypes of drug use and crime are often inaccurate.

Broad policy options

Although violent crime rates have dropped significantly during the 1990s, current concern about the drug-crime nexus is focused primarily on drug use and violence. There are many different types of individuals involved in drug-related violence. Hence, prevention and intervention policies should differ, depending on which type of violent offender we are trying to reach. Some individuals are violent regardless of whether they drink or use drugs. Targeted interventions to reduce aggressive tendencies would be most promising for them. Yet, for some

individuals, the state of intoxication (especially from alcohol), the setting, and specific provocation interact on a specific occasion to cause an isolated incident of violent behavior. Responsible drinking campaigns aimed at reducing high-quantity consumption would be most appropriate for this group, as well as situational controls (such as responsible beverage service training) and community-based actions designed to limit access.

Reduction of most of the violence related to illicit drug use would have to focus on the illegal drug trade.

Reduction of most of the violence related to illicit drug use would have to focus on the illegal drug trade. Drug control efforts for much of this century, and especially since the late 1980s, have attempted to address this issue through interdiction designed to disrupt the importation of drugs into the country and law enforcement strategies designed to arrest, prosecute, and imprison those involved in the domestic market. This has resulted in record numbers of offenders being arrested and incarcerated for drug-related offenses. Critics argue that this approach has failed to curtail drug use or violent crime and that changes in U.S. drug policy are required (Nadelmann 1998). For some, a shift of resources from supply reduction to demand reduction, through prevention and treatment of drug abuse, would be effective in reducing both drug use and systemic violence (Falco 1992). A far more radical alternative strategy, and one that is extremely controversial in the United States, is legalization of drugs (Buckley 1996; Trebach 1993). This, it is argued, would remove the profit from drug dealing, and, without profits, dealers would leave the business and no longer push drugs on young people. In addition, disputes related to illegal distribution would be eliminated.

As discussed at the beginning of this chapter, a variety of harm-reduction models occupy the vast area between the war on drugs and outright drug legalization (MacCoun et al. 1996; Weingardt and Marlatt 1998). Australia and a few European countries employ harm-reduction strategies, and some researchers have noted the lower rates of drug-related crime in such places (Nadelmann 1998). Harrison and Backenheimer (1998) suggest that if drug abusers had easier access to drugs (e.g., in the form of maintenance drugs) and to finances (e.g., in the form of welfare), then there would be little criminal involvement on their part. They also argue that the high rates of illicit drug use and violent crime in the United States are a direct result of the social policies in our country. However, one needs to exercise caution in drawing inferences from the policies that exist in other countries, as American society might differ in other ways that have more important effects on drug consumption and related consequences than policy (MacCoun and Reuter 1997). In addition, it is worth

noting that the country with the best-known harm-reduction-based policies, The Netherlands, has experienced a shift toward more punitive sanctions in recent years, primarily as a result of public fear of crime (Baerveldt et al. 1998).

Others argue that even if we were to eliminate or substantially curtail the drug economy, we would not necessarily reduce violence because much of the drug-related violence results from the recruitment of violent individuals from violent communities (Osgood 1994). It is also possible that if the drug market were reduced or eliminated, some criminals who profit financially from the drug trade would revert to alternative crimes to get money, including violent crimes such as robbery (U.S. DOJ, BJS 1992a). In this case, prevention and treatment efforts may be better spent concentrating on violent individuals and the sources of their violence. These changes would entail providing youths with noncriminal routes to social status, including better paying jobs, better schools, and more opportunities, as well as remedying community disorganization and economic hardships. For example, Inciardi and Pottieger (1998) argue that drug use per se is not the root cause of criminality for most street drug users. Rather, the real cause of the problem is urban poverty and the complex problems surrounding it, such as lack of job skills, educational failure, and inadequate parental socialization.

Still others maintain that both drug use and crime are part of a broader decline in morality and civility in the United States (Bennett, DiIulio, and Walters 1996). Proponents of this perspective argue that retreating from current drug control policies would simply signal a further lowering of moral standards and hasten the descent into social disorder (Wilson 1991, ch. 12).

Although there are no easy solutions to the problems that face us as we enter the 21st century, especially those concerning drug use among youths and the increasingly punitive nature of our response to it, a more open debate of the issues and policy options available would surely benefit society. Fortunately, there are some initial signs that such a debate may, at last, be feasible (Wren 1997).

Implications for the 21st century

In recent years, we have witnessed a large decrease in homicidal violence, although the reasons for the decline are not known. Some experts believe the decline was due to an increased number of police officers on the streets, and others believe it was due to changing demographics, increased violence prevention programs, or improvements in the economy (Goldstein 1998). Goldstein (1998) argues, however, that this decrease was due to the stabilization of drug markets.

The peak in homicide rates in 1979–81 was followed by a two-decade low in 1985. This decline was due to the fact that the powder cocaine market stabilized. Similarly, the sharp increase in homicides in the late 1980s was due to instability in the crack market and the subsequent decline that occurred after the market stabilized in the 1990s. There is, of course, no way to be sure of the exact cause or causes for the recent decline in violent crime. However, if we assume that drug use or drug dealing contributed to the sharp increase in violence of the mid- to late 1980s, then it would be logical to assume that changes in drug use or the drug economy may have contributed to its more recent decline.

If heroin dealing becomes as profitable as cocaine/crack dealing, then we may see an increase in systemic violence. Alternatively, if users and addicts cannot make enough money dealing, then it is possible that property crime may increase.

As new illegal drugs come on the market or old ones regain popularity, and if there is chaos in distribution of these drugs, we may again see increases in drug-related violence. For example, there have been recent increases in heroin use and in organization of heroin dealing (Executive Office of the President, ONDCP 1998d). If heroin dealing becomes as profitable as cocaine/crack dealing, then we may see an increase in systemic violence. Alternatively, if users and addicts cannot make enough money dealing, then it is possible that property crime may increase. Over the past several years, the largest increase in illicit drug use among youths has occurred for marijuana. Although marijuana is not as addictive as cocaine/crack or heroin, little is known about the market for marijuana. With the resurgence of marijuana popularity and the increase in quality and price (Executive Office of the President, ONDCP 1998d), we may begin to see more systemic violence related to sale of the drug. If the market becomes more organized, then we also risk more dealers selling a variety of drugs. Further, with increases in prices for high-quality marijuana, perhaps we will see more economically motivated crimes.

The fact that the newest generation of drug users has largely avoided the use of hard drugs (such as cocaine and heroin) has optimistic implications for their future. That is, this generation should experience fewer negative health outcomes and less involvement in criminal activities (Golub and Johnson 1999). Nevertheless, because of poor socialization, economic hardship, and the lack of skills and opportunities, many of these individuals may still be forced into crime as a means of economic survival.

In contrast to illicit drug market changes, Parker and Auerhahn (1998) argue that the decreases in homicide rates and other forms of violence in large cities during the mid-1990s were preceded by significant declines in alcohol consumption in the United States. They worry that as alcohol use regains popularity, we will again see increases in violence. In addition, if the recent increase in methamphetamine use continues, we may see more psychopharmacologically induced violence. There also has been a noted increase in use of some fad drugs in different areas of the country, including Ketamine (an animal tranquilizer), Rohypnol (a date rape drug), GHB (gamma hydroxy butyrate, a date rape drug), and MDMA (methylene dioxymethamphetamine, a hallucinogen) (Executive Office of the President, ONDCP 1998d). Use of drugs such as Rohypnol and Ketamine, which are sedatives that act similarly to alcohol, may also lead to increases in violence. Our analyses of DUF/ADAM data, as well as research by others (e.g., Hamid 1991), indicate that factors pertaining to drug markets and their relation to the commission of different types of crime will vary by geographic location, presumably because the conditions that affect these outcomes differ from place to place. Thus, interventions designed to positively affect such factors must be adapted to address specific local circumstances and engage community agencies and members in defining problems and finding solutions.

As we reviewed this multifaceted literature, one thing became clear. There are definitely drug epidemics that are cohort specific, and they come and go quickly. As researchers begin to study these epidemics, and especially by the time that empirical findings are published, the epidemics often dissipate. Hence, the conclusions we reach and their policy implications become outdated too soon. In other words, it may be impossible to stay on top of the drug-crime relationship because of its constantly changing nature.

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Note

1. A number of areas cannot be covered in this review given space limitations. Some are noted in the body of the text and references are given that the interested reader can pursue. Other areas omitted include supply-reduction strategies such as interdiction and law enforcement (see Kleiman and Smith 1990; M. Moore 1990). We also do not discuss the intricate relationship among drug use, crime, and HIV infection (see Hunt 1990; Inciardi and Pottieger 1998; Inciardi 1990a). In addition, most of the crimes included in this chapter were predatory in nature (see Chaiken and Chaiken 1990). We could not cover domestic violence, spousal abuse, and child abuse (see Lee and Weinstein 1997; Leonard 1993; Widom 1993; Miller, Maguin, and Downs 1997; Kantor and Asdigian 1997). Another

major area omitted was gun availability and control (see Cook and Moore 1995; McBride and Swartz 1990). We also excluded treatment and prevention, which are dealt with in other volumes in this series.

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