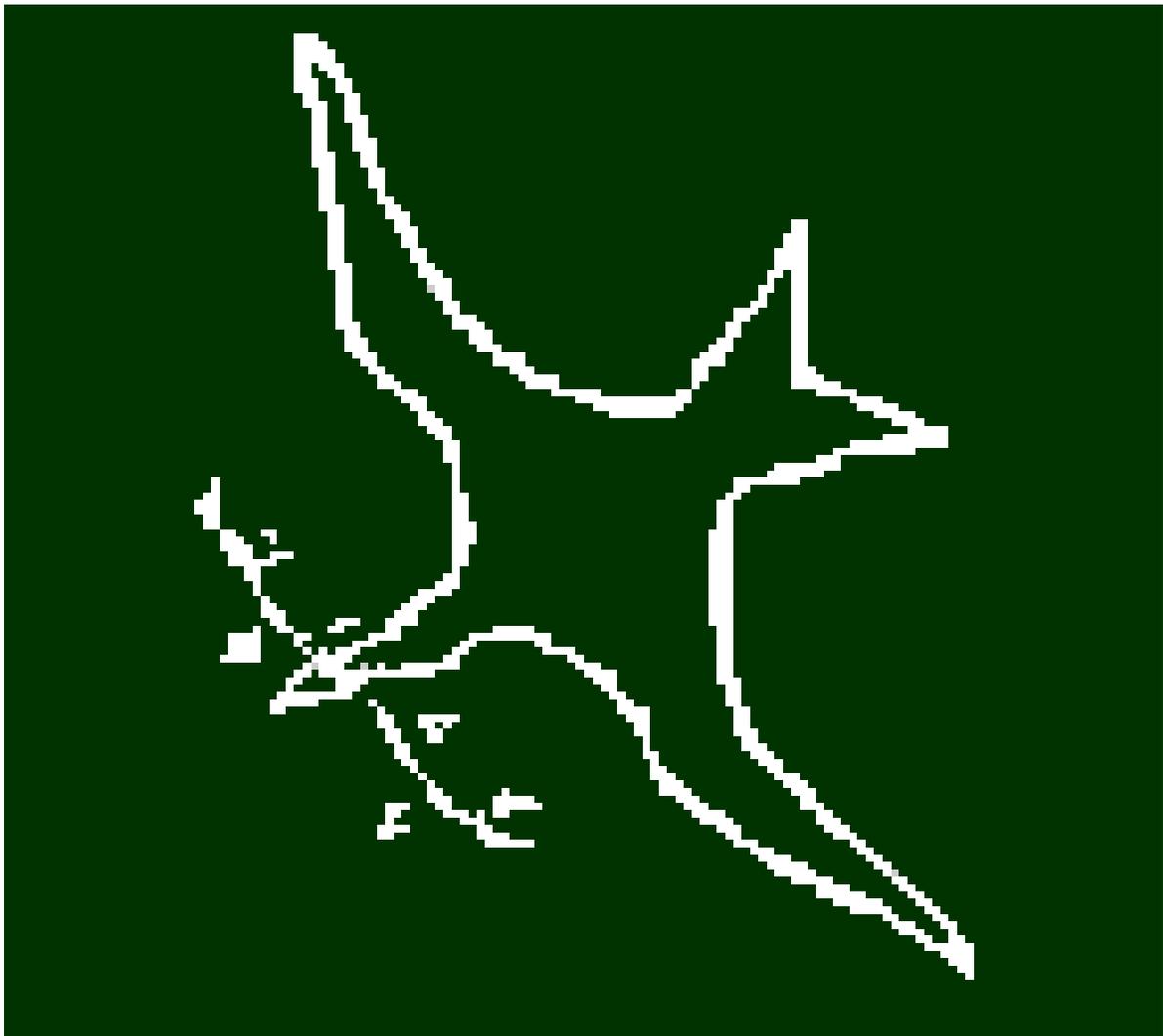


Drugs, Alcohol and Adolescent Violence

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INTRODUCTION

Few issues have captured the public's attention and concern as forcefully as drug use and violence, and adolescence is seen as closely associated with both of these. Indeed, Watters, Reinerman, and Fagan (1985) have argued that drug policy in the United States, beginning with the Opium Exclusion Act of 1906, has been driven by an assumed connection between drugs and crime. A few years ago, illegal drug use was a more dominant concern than violence, leading to the "war on drugs" in the late 1980s. Current opinion polls (in December 1993) show that Americans now view violent crime as the nation's most pressing problem. Americans widely share the belief that drugs are a destructive force that generates other problems, with violence prominent among them. In seeking ways to reduce youth violence, one must consider the possible roles of alcohol and drug use.

This paper focuses on the age span of 12 through 18, the time that most American youth spend in junior or senior high school. Violence and substance use most often begin during this period. Even though the rates of these behaviors do not change drastically when youth turn 19, this end point is useful because it marks the beginning of a rapid decline in the typical adolescent's dependency on his or her parents. With the end of high school the conditions of adolescents' lives change dramatically, and sharp increases are seen in rates of marriage, parenthood, full-time employment, and independent residence.

Research on violence and the use of alcohol and drugs for this age span covers some topics better than others. As an example, on the one hand, self-report studies provide considerable information about the proportion of those adolescents who have used drugs and who have committed violent acts. On the other hand, although abundant laboratory research has been conducted on the effects of intoxication on the aggressive behavior of young adults, virtually no such research has been conducted for minors. With that said, one must bear in mind that not all lines of research for adults are relevant for adolescents or appear fruitful enough to justify further research.

The focus of this paper is on violence as defined by the National Research Council: "behaviors by individuals that intentionally threaten, attempt, or inflict physical harm on others" (Reiss & Roth, 1993, p. 2, emphasis removed). This definition encompasses the illegal behaviors of homicide, assault, sexual assault, and robbery, as well as similar but less severe behavior that is not prohibited by the criminal code. Because research on violence spans several fields, however, it is difficult to enforce any single definition. For some topics the researcher must rely on studies of analogous behaviors, such as those involving pressing a button to deliver an electric shock or those concerning aggression by animals rather than humans. In this paper, I strive to clearly distinguish violence directed at persons from offenses against property, especially theft, a distinction often lost in studies of aggression (Gottfredson & Hirschi, 1993).

I focus more on violent behavior than on victimization from violence. Although some evidence relates intoxication to the likelihood of becoming a victim of violence, research on violence and substance use gives far more attention to offending. Indeed, a general shortcoming of research in this area is the lack of attention to the situational context in which violent acts occur, including the full set of participants and the motives for the actions.

For adolescents, “illegal drugs” include not only substances banned for adults but also alcohol and tobacco products. Of interest here is the use of substances that have intoxicating effects, especially alcohol and the commonly abused illicit drugs, such as marijuana, opiates, and cocaine. Although it is conceivable that some youths commit violent acts to obtain cigarettes, tobacco products do not seem pertinent to public concerns about “drugs and crime” and will not be considered. It is unfortunate that little information exists about the relationship of violence to the use of inhalants such as paint and glue. During the early teen years, use of inhalants is more widespread than use of any other intoxicants except alcohol, according to recent data for eighth graders from the Monitoring the Future study (Johnston, O’Malley, & Bachman, 1993a, pp. 54-56).

Research on the relationship of adolescent violence to alcohol and illicit drug use is far too extensive for individual studies to be reviewed in detail in this paper. Fortunately, the pertinent literature is well covered in recent reviews by highly regarded scholars, including Chaiken and Chaiken’s (1989) review of substance use and predatory crime, Fagan’s (1989a) review of intoxication and aggression, a chapter in the recent report on violence from the National Research Council (Reiss & Roth, 1993), Elliott, Huizinga, and Menard’s (1989) extensive analyses of various forms of substance use and delinquency in the National Youth Survey, and Bushman and Cooper’s (1990) review of laboratory studies of alcohol consumption and human aggression. The goal of this paper is to present conclusions that appear to be well supported by that research, to discuss policy implications of the findings, and to identify gaps in the knowledge base to provide a guide for future research.

My approach to the subject diverges from previous reviews in two ways. Unlike previous authors, I review demographic patterns of rates of violence and substance use to establish the similarity of these phenomena as social problems. Also, I compare the relationship of violence and substance use to other relationships among deviant or problem behaviors to clarify both the implications of the relationship and its likely sources.

Differentiating the Types of Relationships Between Violence and Substance Use

Substance use can be related to violence in several ways. For instance, intoxication from alcohol might lead teenagers to start fights they otherwise would have avoided, and frequent use of alcohol might lead a temporarily sober teenager to commit robbery (i.e., to steal by force) to get money to buy more alcohol. Although both of these scenarios illustrate a potential connection between adolescent violence and substance use, they are distinct from one another. Different types of research are needed to investigate them, and evidence of one type of relationship has limited bearing on the other. Thus, the first task in addressing the relationship between violence and substance use is to decide what types of relationships must be considered.

A widely used typology of potential relationships between substance use and violence is Goldstein’s (1985) tripartite conception. Goldstein distinguished between (a) psychopharmacological effects, which concern the physiological impact of the substance on behavior, (b) economic effects, which pertain to violence committed to obtain money to purchase intoxicating substances, and (c) systemic effects, which arise as a by-product of the sale and distribution of drugs. Although this framework

includes many of the aspects of the relationship of violence to substance use, it does not include all aspects. For instance, the use of illicit drugs might produce rejection from conventionally pro-social peers, leading adolescents to join antisocial peer groups that promote violence. Such a connection is not covered in Goldstein's system. Further, Goldstein's typology focuses only on causal influences of substance use (or sales) on violence. It is quite possible, however, that important noncausal relationships exist between these behaviors. Such possibilities must be considered if one is to gain a useful understanding of the relationship.

In this paper four types of relationships between violence and substance abuse are distinguished, three of which subsume Goldstein's categories. The first is the relationship between violence and intoxication or impairment. This category includes the physiological effects of substances on behavior, but it also incorporates the social and interactional context in which violence is most likely to arise. Thus, it encompasses, for example, the role of norms about how to behave while intoxicated or sober. This category specifically pertains to behavior occurring during substance use. The second category concerns more general patterns of an individual's behavior. Here, the question changes to whether people who use intoxicating substances tend to be the same people who engage in violence. Goldstein's economic category would be included, but so would many other connections, such as that described earlier in the example about peer groups. The third category is Goldstein's systemic effects, which is distinctive in that it does not pertain to an individual's substance use but rather to his or her involvement in the illicit drug trade. The final category, not covered in Goldstein's scheme, is the similarity between the demographic patterns of violence and substance use. Here I address how closely the two problems track one another in broad social categories and in time. This level of analysis does not directly reflect individual-level causal relationships, but it can provide a great deal of information about their distinctiveness as social problems.

I begin with the broadest level of analysis, namely, demographic patterns. The focus then progressively narrows to a consideration of the coincidence of individual differences in violence and substance use and to the issue of intoxication (or impairment) and violence. Systemic violence is discussed last, because the limited information on that subject is best understood in light of material concerning the other types of relationships.

Demographic Patterns of Adolescent Violence and Substance Use

The first question to address is whether there are similarities in the distributions of violence and substance abuse across broad social groups and over time. That is, are these problems concentrated in the same or different populations in the United States?

It is important to note that the answer to this question has limited bearing on the causal relationship between these behaviors. The demographic patterns may match when there is not a causal relationship because of shared causes, such as poverty or sex roles. Conversely, even if substance use has an important influence on violence, the demographic patterns may diverge because of other influences that are not shared.

Nevertheless, this level of analysis is pertinent to the concerns that underlie this paper. Americans widely believe that the United States faces a problem of youth violence that is growing in amount and seriousness and that this problem is concentrated among certain groups. In the hope of finding a solution to the problem, we must ask why. This question is as much about the demographic trend as it is about the individual-level causes that contribute to it.

An example will help illustrate this point. Suppose ample evidence were reported of a causal link between parents losing their jobs and their adolescent children committing an increased number of violent acts. Then, generally speaking, reducing unemployment should be a means of reducing violence. But what if parental unemployment rates had fallen at the same time that the adolescent violence rate had increased? Perhaps other causes of violence had been moving in a direction consistent with an increase in violence, in which case they would better explain this particular increase. Researchers would need to determine those other causal factors; most likely, efforts at ameliorating them would be more useful than efforts to reduce unemployment. Another possibility is that the increase in youth violence could be associated with unemployment through a more complex relationship. For instance, the impact of parental unemployment on youth violence might be much greater when few parents are unemployed than when many are unemployed, perhaps through a process of relative deprivation. This situation could produce an aggregate relationship that is opposite to the individual-level relationship. In such a scenario, it would prove very difficult to reduce youth violence by attacking parental unemployment. In both cases, aggregate-level information is essential to understanding the sources of a current social problem and to formulating appropriate social policy.

Age

Age trends provide perspective on how the period of adolescence relates to the larger life span with regard to violence and substance use. In broad terms, rates of violent behavior and substance use follow the same age trend as almost all criminal or delinquent behaviors, with low levels up to the pre-teen years, a peak somewhere between mid-adolescence and early adulthood, and a continuous decline over the rest of the life span (Hirschi & Gottfredson, 1983). As Steffensmeir, Allan, Harer, and Streifel (1989) have pointed out, however, only a crude similarity is seen in the age trends for different offenses, and substantial differences often occur across behaviors in the peak years of offending and in the rate of decline thereafter.

National surveys of self-reported offending (Elliott, 1994; Elliott & Huizinga, 1984, p. 62; Osgood, O'Malley, Bachman, & Johnston, 1989) indicate that peak levels of assault and robbery occur by age 17 (and perhaps as early as age 14 for minor assaults). The rates then decline rapidly through the late teens and early twenties, falling to no more than one third of their peak by the mid-twenties. National arrest statistics (Steffensmeir et al., 1989, p. 815; Osgood et al., 1989, p. 399) indicate somewhat later peak rates for assaults (age 21 for assaults, age 19 for homicides), with little decline until the thirties. Osgood et al. (1989) suggested that the discrepancy between the self-report findings and national arrest statistics could be due to the fact that altercations among adults are more likely than those among younger people to come to the attention of authorities. Altercations among adults may have greater visibility because they occur in public places such as bars and more often

result in serious injury. Elliott (1994) has recently demonstrated, however, that we should not presume that self-report findings reflect only minor incidents. He found essentially the same age trend as in other self-report studies when he limited his analysis to serious violent offenses, which he defined as incidents of aggravated assault, robbery, or rape that involved either injury or use of a weapon. Statistics for robbery are more consistent for the two methods, with the peak age of arrest at 17. Arrests for robbery decline more rapidly than arrests for assaults, but not as rapidly as self-reported robbery.

Illicit drug use also increases dramatically during adolescence, according to self-report data, but does not increase as rapidly as violent behavior (Elliott & Huizinga, 1984; Johnston et al., 1993a). Illicit drug use by 12- to 14-year-olds is no more than half as frequent as use by 16- to 18-year-olds, yet differences between these ages for self-reported violent behavior are much smaller.

The use of most illicit drugs has declined substantially since 1980 (as is discussed later). Further, the inevitable entanglement of age, period, and cohort effects makes data on age trends ambiguous. It is clear from the available data, however, that the peak age for self-reported illicit drug use is later than that for violent behavior and that illicit drug use declines more slowly with age than does violent behavior. Data collected in 1992, for instance, indicate that use of marijuana and other illicit drugs was most common at age 21 to 22 and that the rate of use at age 31 to 32 remained at about two thirds of that level (Johnston, O'Malley, & Bachman, 1993b).¹

Unlike the use of illicit drugs, alcohol consumption is legal for adults in the United States. Furthermore, alcohol is widely consumed as a food, so its use does not imply intoxication. For the purposes of this paper, it is more useful to focus on drunkenness or consumption of large quantities of alcohol than on alcohol use in general. Heavy consumption of alcohol appears even in early adolescence. Johnston et al. (1993, pp. 59-60) reported that 8% of eighth graders indicated they had been drunk in the past year and 13% indicated they had consumed five or more drinks in a row during the past 2 weeks. According to these researchers, these high rates increase dramatically during middle adolescence, with the figures for high school seniors being 30% and 28%, respectively. The peak age for heavy consumption of alcohol comes in the early twenties, matching or closely following the age at which use of alcohol becomes legal (Johnston et al., 1993b, p. 76). These rates decline only slowly into the early thirties. Thus, the age trend is similar to that for use of illicit drugs. According to national arrest statistics for public drunkenness and driving under the influence, the peak age of arrest for both offenses was 21 in 1980 (Steffensmeir et al., 1989), which is comparable to the findings from the self-report data.

On balance, the evidence indicates that violent behavior reaches peak levels considerably earlier than does substance use, and it declines much faster as well. Indeed, from the mid-teens through the early twenties, the age gradients for violent behavior are steep and in the opposite direction as those for substance use.

Sex

Males engage in violent behavior more often than females during both adolescence and adulthood. This difference holds across the full range of violent behaviors for both self-report and arrest data, although it tends to be smaller for less serious forms of violence. For example, about twice as many males as females report participating in common fights (Elliott et al., 1989; Osgood et al., 1989); however, for aggravated assault and robbery, both self-reported offending and arrest rates for males are at least seven times as high as those for females (Osgood et al., 1989, pp. 399-401; Maguire & Flanagan, 1991, p. 423). An even larger sex difference occurs in victims' reports of the sex of perpetrators, as indicated in the National Crime Survey (Maguire & Flanagan, 1991, p. 277), but this finding is not limited to juvenile offenders.

Most data indicate that males use alcohol and drugs more frequently than females, but the gender difference is far smaller than for violent behavior (Johnston et al., 1993a, 1993b; Elliott et al., 1989, p. 28). Johnston et al. (1993a, pp. 54-60) reported that annual and 30-day prevalence rates for the use of alcohol and a broad range of illicit drugs tended to be higher for males than for females, but in most cases the differences were minimal. In several instances (most often among eighth graders), more females used specific substances than males. The largest sex difference was in the percent of twelfth graders reporting having been drunk in the past 30 days: 35% of the males compared to 24% of the females answered affirmatively. However, even this difference was nominal in comparison with rates of violent behavior.

Race

Race differences in offense rates are especially difficult to interpret. Self-report surveys of offense rates may produce underestimations of race differences because the poorest segments of minority groups are often underrepresented and because minority group members may be less willing than others to report their offending (Hindelang, Hirschi, & Weiss, 1981). At the same time, any bias in law enforcement would tend to produce overestimates of minority arrest rates. Indeed, the two sources of information are in sharpest disagreement about racial differences. Even so, some consistencies are seen in the relationship of race to violence and drug use. The findings are largely limited to whites and African-Americans; available studies have not adequately represented other groups.

According to Elliott et al. (1994), self-report data on violent behavior from the National Youth Survey indicate that white and African-American youth have similar rates of minor assaults, that African-American youth are somewhat more likely to commit serious assaults, and that African-American youth are twice as likely to commit robbery. This pattern also holds for data from the Monitoring the Future study (Maguire & Flanagan, 1991, p. 315).² Using the data from the National Youth Survey, Elliott (1994) found roughly 50% higher prevalence rates of serious violent offenses among African-American youth than white youth during the peak offense ages. Much greater differences are seen when arrest rates are analyzed. In 1989, for example, the total arrest rate for violent offenses was over five times as high for African-Americans as for whites (Maguire & Flanagan, 1991, p. 425). As with self-report data, the difference was greatest for robbery (13 to 1)

and smallest for less serious assaults (4 to 1). Victim reports of offender's race from the National Crime Survey provide a third source of information on race differences in violent behavior. These findings, which fall between those of the other two sources of information, indicate that the rate of assaults by African-Americans is twice as high as that of whites and the rate of robbery is eight times as high (Maguire & Flanagan, 1991, p. 277). However, the victimization statistics are not limited to juveniles but rather combine all age-groups, which may explain some of the difference between these findings and the self-report results.

Despite their diversity, the findings on race and violent behavior are in sharp contrast to the pattern seen for race and use of alcohol and illicit drugs. Both the National Youth Survey and the Monitoring the Future study indicate substantially *higher* rates of substance use for whites than for African-Americans, typically in the range of two to one for annual use and for drunkenness (Elliott et al., 1989, p. 33; Johnston et al., 1993a, pp. 69-71). Recent reports from Monitoring the Future, which also present rates of substance use by Hispanic youth, indicate that Hispanic youths' rates of substance use are more similar to rates for whites than for African-Americans and even exceed the rates of whites for marijuana and cocaine use (Johnston et al., 1993a, pp. 69-71). Arrest rates for public drunkenness and driving under the influence are somewhat lower for African-American juveniles than for white juveniles (Maguire & Flanagan, 1991, p. 425).

Time Trends

According to victims' reports of crime in the National Crime Survey, the per household rate of violence decreased slightly from 1975 to 1992 (Rand, 1993). However, violent crimes reported to the police increased by over 50% during the same period (Maguire, Pastore, & Flanagan, 1993, p. 357). Neither of these statistics directly reflects the rate of violence among adolescents, however, because both are based on all age-groups (over 12 for the National Crime Survey). Osgood et al. (1989) provided more relevant information by focusing on a single age-group: 17-year-olds. They compared self-report rates of offending from the Monitoring the Future study with arrest statistics from the Uniform Crime Reports for 1975 through 1985. Both sources of data were in agreement that rates of assault had increased by 20% to 40% during that time, with much of that increase coming in the first few years. For robbery and nonviolent offenses, the trends were erratic over time and inconsistent between the two types of data. A more dramatic and recent increase in the most serious form of violence is indicated by James Fox's analyses of homicide (reported by Maguire et al., 1993, pp. 392-394), which show that the homicide arrest rate doubled from 1985 to 1991 for males of ages 14 to 17 and 18 to 24, whereas the rates were constant or declining for other groups. Thus, research indicates limited increases in rates of *all assaults* by adolescents over the past 15 to 20 years and a more dramatic increase in the much smaller category of lethal assaults by adolescents. No evidence indicates that violence by adolescents has decreased.

The trends in rates of substance use over this period were very different. Numerous sources point to a peak in adolescents' use of alcohol and illicit drugs in approximately 1980, with substantial declines thereafter. According to the National Household Survey on Drug Abuse, for example, 7% of 12- to 17-year-olds in 1972 reported using marijuana in the past 30 days. The proportion increased to 17% in 1979 and fell to 4% by 1991 (Maguire et al., 1993, p. 338). In the Monitoring

the Future study, the proportion of high school seniors who reported having five or more drinks in a row peaked at 41% in 1980 and declined to 28% by 1992. The year of peak use varied somewhat across substances. According to the Monitoring the Future study, use of hallucinogens and some prescription drugs peaked at or before 1975, whereas cocaine use peaked in 1985. Despite this variability, the latest reports from the National Household Survey (Maguire et al., 1993, pp. 337-338) and the Monitoring the Future study (Johnston et al., 1993, pp. 76-78) indicate that the use of virtually all substances that have been studied has been declining substantially for a number of years.

This conclusion also is supported by other data sources for adults. Each year the Gallup Poll (based on a nationally representative sample of adults) includes an item asking whether respondents drink alcohol. The highest percentage of positive responses (71%) was reported in 1976 through 1978 (Maguire et al., 1993, p. 352). Reflecting the same trend, the proportion of drivers involved in fatal crashes who were found to have elevated blood alcohol levels has decreased consistently since systematic statistics first became available in 1982 (Maguire et al., 1993, p. 355). Although this trend holds for all ages, it is especially strong for the youngest age-group (16 to 20). Similarly, arrests for alcohol-related offenses and for driving under the influence had increased for some time until 1981 to 1983 but then declined considerably (Maguire et al., 1993, p. 456). The exception to this general trend is for arrests for drug abuse violations. However, such arrests are highly dependent on law enforcement efforts (e.g., financial support for the war on drugs) and thus may not accurately reflect substance use. Arrests for drug abuse violations continued to increase far longer than others, but they too have fallen precipitously according to recent reports (Maguire & Flanagan, 1991, p. 412; Maguire et al., 1993, p. 423).

One cannot deny that substance use is a serious problem in the United States and that this problem may be worse than ever for certain drugs in specific places, such as crack cocaine use in some inner-cities. Yet such instances should not obscure the larger picture, which indicates overwhelmingly that the United States has experienced a dramatic decline in substance use for all age-groups during a period in which the rate of adolescent violence has increased in some respects and decreased in none.

Conclusions

In general terms, broad demographic patterns of violence and substance use have much in common. Long-term arrest statistics indicate that levels of violence and substance use are much higher today than 35 years ago. Rates of both rise sharply during adolescence and are higher for males than for females. On closer examination, however, sizable differences are apparent. Violent behavior is first seen at substantially younger ages than is substance use, and rates of all but perhaps the most serious violent acts decline at earlier ages and more sharply than does the rate of substance use. Although males are more likely to use intoxicating substances than females are, the difference is small relative to the many-fold sex difference in rates of violence. By most indications African-American adolescents have substantially higher rates of violent behavior than whites, but the difference is small or opposite for rates of substance use. Finally, adolescents' substance use has declined considerably for more than a decade, but their violent behavior has increased.

Rates of substance use therefore do not appear to be of value for explaining the demographic patterns of adolescent violence. For instance, the especially *high* rate of violence among today's adolescent African-American males certainly is not explained by their relatively *low* rate of substance use. If aggregate rates of substance use contribute to rates of adolescent violence, the contribution must be through indirect and complex avenues, such as having different effects for different types of people or in different contexts. More likely, any contribution of substance use to the aggregate pattern of violence is dwarfed by other causal factors. Nevertheless, these aggregate patterns do not rule out the possibility that violence could be related to substance use at an individual level or even that reducing substance use could be of some value for reducing violence. These questions are addressed in the following sections.

The Individual-Level Relationship of Violence and Substance Use

Do adolescents who use alcohol or illicit drugs commit more violent acts than those who do not? Early sociological work suggested they would not. Merton's (1938) seminal presentation of anomie theory classified substance use and crime (including violence) as manifestations of different individual adaptations to this condition. Crime would reflect innovation, arising when there is support for conventional goals without adequate means to achieve them; substance use would reflect retreatism, arising when both goals and means are rejected. Cloward and Ohlin (1960) retained this theme in their influential application of strain theory to youth deviance. They specified distinct subcultures of conflict (or violence) and retreatism (or substance abuse), both of which were separate from a criminal subculture oriented toward organized crime for profit. Research on gangs in the early 1960s provided empirical support for this distinction, finding that violence was the focal activity of some gangs and substance use was the focal activity of others (e.g., Short & Strodtbeck, 1965, pp. 200-209). Fagan's (1989b) research on gangs in the mid-1980s also isolated a set of gangs with substantial involvement in substance use and negligible involvement in violence. Those gangs in Fagan's study that had high rates of violence, however, also had high rates of substance use.

Research of this sort is less relevant to the individual-level relationship between violence and substance use than might first be apparent. Even if these gang members were representative of the general population of adolescents at risk for either violence or substance use, these results would show only that the most violent teenagers are not typically the most serious substance abusers. Although this information is sufficient to conclude that the two behaviors are not perfectly correlated, it is still quite possible that they would be highly correlated by the standards of social science. Suppose that highly violent individuals use illegal drugs occasionally and that individuals who frequently use illegal drugs engage in violence occasionally. All of these individuals would still be above average for both behaviors because most adolescents rarely or never do either. This combination would produce a substantial positive correlation.

There are two lessons here. First, data from general populations are necessary for establishing the individual-level correlation. Second, even when an impressive correlation exists between two behaviors, much remains distinctive about each. Consider, for example, Kaplan and Peck's (1992) application of strain theory at the individual level, which portrays deviance as a consequence of alienation in the form of self-rejection. In studying a general population sample of adolescents, they

found support for the idea that substance abuse and violence represent distinct responses to alienation. The relationship of self-rejection to substance use was mediated by an avoidant coping style, whereas the relationship of self-rejection to violence was mediated by a coping style of attack. Despite this difference, however, there remained a substantial correlation between substance use and violence.

Fortunately, a number of studies have provided the data necessary to establish the individual-level relationship between adolescent violence and substance use. Data of this sort are readily obtained through survey research methods prominent in the study of delinquency and substance use. In the following sections of this paper, I address the strength of this relationship and its consistency across substances and types of violence. Separate attention is given to violence in the course of economic crimes committed to obtain drugs. To provide a better understanding of the meaning of the connection between violence and substance use, I then compare this relationship to other relationships among deviant or problem behaviors.

Strength and Consistency of the Relationship

Tables 1 and 2 present typical findings on the individual-level relationship between adolescent substance use and violent behavior. Table 1 presents findings from the National Youth Survey that relate level of involvement in substance use (nonuser, alcohol user, marijuana user, polydrug user) to specific categories of violent behavior (Elliott et al., 1989). For all three types of violent behavior—felony assault, robbery, and minor assault—more serious substance use was associated with a greater probability of violence. The relationship is substantial, with the rate of violence by polydrug users many times higher than the rate for nonusers.

Table 2 shows similar findings for high school seniors from the Monitoring the Future study, based on national samples for three different years (Johnston et al., 1993a). In this table, the relationship is expressed by correlation coefficients rather than by percentages. Each of 12 substances is related to a measure of violence that is based on five items, four concerning assaults and one concerning robbery. These correlations are consistent, with all but two quite close to .20. These rather modest relationships increase to a moderate .30 for combined indexes of substance use (.32 for all substances and .30 for all substances other than alcohol and marijuana). When expressed in terms of percentages, these relationships are comparable in strength to those shown in Table 1.

These findings are based on self-reports of behavior. Information from other sources is far more limited, but it is consistent with these findings. For instance, data from the Drug Use Forecasting system of the National Institute of Justice, in which urine testing is used to assess substance use among arrested individuals, have shown that roughly half the individuals arrested for violent offenses test positive for illicit substance use (Maguire et al., 1993, p. 459). This rate is far above the level of illicit substance use among the general population, lending further support to the conclusion that individuals who use intoxicating substances are more likely to engage in violent behavior. It should be noted, however, that these results combine data for juvenile and adult arrestees. Although they did not distinguish violence from other forms of delinquency, Dembo et al. (1992) found a consistent relationship between delinquency and substance use from self-reports and urine tests.

Taken as a whole, the available evidence demonstrates a moderately strong relationship between violence and substance use. This relationship is consistent across types of intoxicating substances and across the more widely studied types of violence (i.e., assaults and robbery).

Violence, Substance Use, and the Generality of Deviance

How should the relationship between violence and substance use be interpreted? An obvious explanation is that intoxication or impaired judgment following the ingestion of intoxicating substances makes people prone to act violently. Yet there are other feasible explanations. For example, some of the factors in individuals' personalities or experiences that lead them to use intoxicating substances may also lead them to commit violent acts.

Lending support to this second hypothesis, several authors have noted that a wide variety of deviant, illegal, or problem behaviors are positively correlated with one another (Dembo et al., 1992; Donovan & Jessor, 1985; Elliott et al., 1989; Gottfredson & Hirschi, 1990; Jessor and Jessor, 1977; Osgood, 1991; Osgood, Johnston, O'Malley, & Bachman, 1988; White, 1992). These behaviors include delinquent acts such as theft and violence, many forms of substance use, precocious sexuality, and dangerous driving. Jessor and Jessor (1977) coined the phrase "syndrome of problem behavior" to emphasize the connections among these behaviors and to make the point that the behaviors could be viewed as a set of symptoms that follow from a shared set of causes. As Osgood et al. (1988) noted, the idea of common causes is implicit in the theoretical literatures of these fields. Many prominent theorists have simultaneously addressed several of the behaviors in a single framework, and the general theories of social disorganization, strain, social learning, labeling, and social control have been applied to most if not all of these behaviors by various scholars. Thus, it is logically possible to explain the relationship between substance use and violence without reference to a causal influence of one on the other.

How can one gauge the applicability of a "generality of deviance" explanation to the relationship between substance use and adolescent violence? A simple initial step is to compare this relationship with other relationships between problem behaviors. Causal variables that contribute to all problem behaviors will tend to generate uniform correlations among all of those behaviors, whereas a causal influence of one behavior on another would tend to produce a stronger association between those two behaviors. Tables 1 and 2 report the relevant information, indicating relationships between substance use and two other types of delinquent offenses: theft and damaging property.³ In both data sets, theft is even more strongly related to substance use than is violence, and damaging property tends to be slightly less related to substance use than is violence. Furthermore, the association between violence and substance use appears quite ordinary when compared to relationships between other problem behaviors, such as between adolescent cigarette smoking, illicit substance use, and dangerous driving (as reviewed in detail by Osgood, 1991).

The value of the generality of deviance explanation can also be examined through composite indices that combine measures of several different problem behaviors. A composite index would more completely or reliably represent the general tendency than would any single behavior. If the shared causes are indeed the source of the relationship of substance use to the composite index than to an

index limited to violent behavior. Table 2 illustrates that this is the case. The strongest relationship is found at the highest level of generality: A correlation of .45 was found between an index combining all 14 items reflecting delinquency (“general delinquency” and another index combining use of all 12 substances (“all substances”). None of the correlations of violence with substance use (specific or general) approach this level.

The overlap between violence and other illegal behaviors also is evident in official records of crime. As the National Research Council panel reported, “Most recorded violent crimes occur in the course of long, active criminal careers dominated by property offenses. . . . The general pattern is that while few offenders begin their criminal careers with a violent crime, most long arrest records include at least one” (Reiss & Roth, 1993, p. 5). Furthermore, findings from the Drug Use Forecasting system indicate that individuals arrested for property offenses are even more likely to test positive for illegal drug use than are those arrested for violent offenses (Maguire et al., 1993, p. 459).

Studies relating explanatory variables to multiple problem behaviors also provide evidence that is helpful in determining whether the relationship between adolescent violence and substance use is a manifestation of the generality of deviance. Indeed, these studies (e.g., Elliott, Huizinga, & Ageton, 1985; Elliott et al., 1989; Gottfredson & Hirschi, 1993; Jessor & Jessor, 1977) invariably have found more similarity than difference in the correlates of various problem behaviors.

Scholars who have investigated relationships among various deviant or problem behaviors are in broad agreement that the lion’s share of those relationships is attributable to shared causes (Dembo et al., 1992; Donovan & Jessor, 1985; Elliott et al., 1989; Gottfredson & Hirschi, 1990; Jessor & Jessor, 1977; Osgood, 1991; Osgood et al., 1988; White, 1992). If the high rate of committing violent acts among substance users is best explained by factors that could lead to any of a wide variety of deviant (i.e., conventionally disapproved) activities, what would these factors be? Textbooks on delinquency and substance use offer many plausible answers. Despite this diversity, two broad themes that may be of heuristic value repeatedly appear in social and psychological explanations of individual-level problem behavior (Osgood, 1991). First, theories that emphasize socialization or interpersonal relationships (e.g., Akers, 1977; Cohen, 1955; Elliott et al., 1985; Hirschi, 1969; Jessor & Jessor, 1977; Shaw & McKay, 1942) typically portray problem behavior as stemming from a lack of successful social integration in the conventional domains of adolescent life, such as family, school, pro-social peer groups, and religion. Second, theories that emphasize personality often view delinquency as arising from inclinations toward impulsiveness and risk-taking (Arnett, 1992; Caspi et al., 1994; Gottfredson & Hirschi, 1990).

It is also important to note that studies of the generality of deviance give clear evidence that shared causes *only partially* explain any specific deviant behavior. Basing their conclusions on structural equation models of concurrent and longitudinal relationships among several problem behaviors, Osgood et al. (1988) and Dembo et al. (1992) stated that shared causes and unique causes both contribute substantial portions of the stable, reliable variance of each specific behavior. The consistency of their findings is particularly striking when one considers that Osgood et al.’s analysis was limited to white adolescents who remained in high school through their senior year, and Dembo et al.’s was based on a high-risk, racially mixed sample of youth held in a detention center. McGee

and Newcomb (1992) provided evidence of this same balance between unique and shared components through a second-order factor of general deviance in a longitudinal model. The unique aspect of different deviant behaviors is also apparent in White's (1991), White and Labouvie's (1994), and Dembo et al.'s (1994) demonstrations that it is possible to isolate groups of individuals who consistently "specialize" in one deviant behavior or a subset of deviant behaviors. White (1991), White and Labouvie (1994), and Kaplan and Peck (1992) also reported etiological factors that distinguish between deviant behaviors.

Longitudinal Relationships Between Violence and Substance Use

The findings reviewed in the preceding section strongly suggest that a large share of the relationship between violence and substance use is attributable to the generality of deviance, reflecting shared etiological roots among deviant behaviors. Even so, these findings do not entirely rule out the possibility of causal influences between these two types of behaviors. Longitudinal evidence is especially helpful for assessing this possibility.

One type of evidence sometimes used to assess the causal relationship between violence and substance use is the relative timing of the behaviors, or their sequence in the life course. This approach follows from the basic scientific principle that an event can only cause outcomes that it precedes. From their review of the evidence, Chaiken and Chaiken (1989, p. 216) concluded that among youths who engage in both predatory crime and substance use, the onset of crime most often comes first. Indeed, because the peak age of violent behavior comes before the peak age of substance use and because both behaviors are widespread, it is inevitable that the former would most often precede the latter. This line of reasoning effectively rules out the possibility that substance use routinely turns inexperienced innocents into violent criminals.

Nevertheless, concentrating on the sequence of onset may mean focusing on a detail and losing the larger picture. As Hirschi (1984, p. 50) noted in this context, comparing the date of the onset of substance use to the date of the initial violent act amounts to asking whether the first sip of beer comes before or after the first fistfight—no doubt a trivial matter in relation to the concerns of the general public and of policy makers. Even if one were to modify the question by choosing more serious levels of the behaviors, the typical sequence alone tells us little about the contingency of one behavior on another. Whichever behavior typically comes first, the important question is whether engaging in one behavior changes the likelihood of engaging in the other. It would be useful to know whether increasing substance use would generate more frequent and serious violence by people with a history of both; however, more sophisticated causal analyses are necessary to determine whether either of these behaviors is contingent on the other in this fashion.

Although several studies have investigated the influence over time of substance use on illegal behavior and of illegal behavior on substance use, only a few have distinguished violence from other forms of delinquency. Kandel, Simcha-Fagan, and Davies (1986) found that illicit drug use in adolescence predicted illegal behavior in early adulthood, but only in the form of theft, not violence. Investigating causal influences in the opposite direction, White (1992) concluded that earlier violence did not predict later drug problems, but early delinquency of other sorts did. In an analysis

limited to alcohol use and violence, White, Brick, and Hansell (1993) reported that earlier violent behavior led to increases in alcohol use, but they found no evidence of an influence of alcohol use on later levels of violence. Dembo et al. (1991) reported opposite results for their sample of high-risk youth (juvenile detainees). In their study, earlier alcohol use was the sole significant predictor of later violent behavior and of several other types of delinquency; however, data from both self-report and urine test measures of marijuana and cocaine use were essentially unrelated to violence and other types of delinquency. Taken together, this set of studies certainly does not provide clear evidence of a causal link (in either direction) between violence and substance use.

Elliott (1993, 1994; Elliott et al., 1989) has suggested that these longitudinal relationships may be better understood if one distinguishes between the causes for the onset of delinquency or substance use and the causes for the continuation of the behavior (as opposed to desistance). From adolescence through early adulthood, desistance is more common for delinquency, and continuation is more common for substance use (Elliott et al., 1989; Kandel et al., 1986). Elliott et al. (1989) found evidence that substance use did not predict the onset of delinquency but did predict the continuation of delinquency over time. This finding is consistent with those of the two studies cited earlier that found an influence of substance use on illegal behavior. For the young adults in Kandel et al.'s (1986) research and for the high-risk youth studied by Dembo et al. (1991), delinquency almost surely reflects continuation rather than onset. Further research is needed that makes a more explicit distinction between onset and continuation before it will be possible to determine whether there is a reliable influence of substance use on later violence. However, controversies in the study of criminal careers illustrate that there are many methodological pitfalls surrounding research based on distinctions of this sort. (For a discussion, see Osgood & Rowe, 1994.)

Economic Crime and Substance Use

A topic that merits special attention is the possibility that substance abusers are driven to economic crime to maintain their supply of drugs. The general public seems to believe in this theory, and a variety of research evidence demonstrates the phenomenon as well. Chaiken and Chaiken (1989, pp. 225-234) reviewed many studies that report higher rates of all forms of theft for individuals during periods of drug addiction than during periods when the same individuals were not addicted. If addicts use force to obtain money, the economic crime will also be a violent crime, such as robbery or homicide. Inciardi's (1990) study of adolescents selected for high rates of both crime and substance use indicates this relationship between substance use and economic crime for juveniles. Robberies were committed by 59% of the adolescents during the preceding year, and the respondents stated that most of these robberies were committed to obtain drugs.

Consideration of all the relevant information, however, leads to the conclusion that seeking money to obtain drugs is not a major cause of adolescent violence. First, the best evidence that economic crime tracks substance use is limited to periods of heroin addiction. In their extensive review of drugs and predatory crime, Chaiken and Chaiken concluded that other than in periods of physical addiction, "for most people, changes over time in individuals' use or non-use of drugs are not systematically related to changes in criminal activity" (1989, pp. 211-212). They noted that this distinction is important because only a small proportion of users of illegal drugs ever become

addicted. Furthermore, use of addictive drugs such as heroin and crack cocaine is far lower in adolescence than in adulthood, even at nonaddictive levels (Johnston et al., 1993a, pp. 53-60, 1993b, pp. 41-60; Maguire et al., 1993, pp. 339-341).

Second, the connection of addiction to violent crime is much weaker than its connection to theft. Anglin and Speckart's (1988) analysis of crime by adult addicts found that during addiction, there was even less of an increase in robbery than in other property crimes. Furthermore, arrest rates for other violent offenses were no higher during periods of addiction than they were during periods of nonaddiction.

Third, the overwhelming majority of substance users consume illegal drugs infrequently and generally need not resort to crime to pay for their use. This group provides a vast source of revenue for the drug economy, which, in turn, creates opportunities for many of the more serious substance abusers to support their use by serving as low-level operatives in the drug trade (Chaiken & Chaiken, 1989; Goldstein, 1981; Johnson, Williams, Dei, & Sanabria, 1989). As a consequence, the total amount of economic crime necessary to support the nation's drug economy is far less than one might assume.

Finally, the economic motive for drugs does not appear to contribute to a meaningful proportion of adolescents' violent acts. The relationships shown in Table 2 demonstrate that the strength of the relationship between violent offending and substance use does not depend on the cost or addictive potential of the substance. The correlations of violence with alcohol and marijuana use are just as strong as with any other substance, and the correlation with heroin use is weakest. The same is true for theft. In a different vein, Goldstein, Brownstein, Ryan, and Bellucci (1989) reviewed police records of over 400 homicides in New York during 1988 to determine the contribution of illegal drugs. Although they concluded that over half of the homicides were connected with drugs in some way, in only 2% of the cases did the homicides follow from an effort to get money for drugs. This finding is especially impressive when one considers that New York is generally regarded as the U.S. city with the greatest problem of drug addiction (Johnson et al., 1989) and that the researchers studied precincts with high rates of drug abuse and addiction.

There is no denying that specific acts of violence may occur solely because an adolescent is seeking drugs or the money to buy them. Nevertheless, such acts constitute only a small part of the problem of adolescent violence, and they can account for very little of the relationship between substance abuse and adolescent violence.

Violence During Intoxication or Impairment

The research reviewed thus far indicates that (a) demographic patterns of adolescent violence do not closely correspond to patterns of substance use and (b) the higher rate of violence by substance users as compared to nonusers is more a reflection of shared influences on a wide variety of deviant behaviors than of any causal relationship. At a societal level, substance use is clearly not a principal source of violence. Thus, it is ironic that most research on substance use and violence focuses on the specific effects of the state of intoxication or impairment. (In this section, the term *intoxication* is used broadly to refer to the altered state subsequent to ingesting a drug, including impairment.)

Nevertheless, this topic does merit attention. Although analysis of individual differences shows that the causal influence of intoxication on violence must be limited, such evidence does not totally preclude causal influence. A more detailed level of analysis is necessary, however, to understand any role that substance abuse may have in determining where and when violence will occur. For instance, the finding that roughly half of all homicides are preceded by alcohol use by the victim or offender calls for greater attention to the role of intoxication in violent interactions. A more situational focus of this sort may also have advantages for formulating policy because it can have implications that are more easily implemented than broad societal change or individual-level interventions.

Fagan (1989a) provided a thorough review of research on intoxication and violence, so the present discussion will be confined to a general summary. Results of three types of research will be reviewed: animal studies, laboratory analogs with human subjects, and research with humans in natural settings.

Animal Studies of Intoxication and Aggression

There are decided benefits to using animals to study the impact of intoxication on violence. It is considered acceptable to administer heavy doses of drugs to species other than humans, perhaps even inducing physical addiction. Such experiments are not permitted for humans. Furthermore, researchers can study the behavior of animals under intoxication in settings where aggressive behavior is likely in the natural behavior of a species, something that is also difficult to re-create for humans.

The drawbacks to nonhuman research are obvious as well. The pharmacological effects of substances may be different for nonhuman species than for humans, and aggressive behavior may serve different functions for those species. It is not clear that results from animal studies can be generalized to humans. Because animal research is the only source of controlled experimental evidence on many aspects of the effects of intoxicating substances, however, it cannot be ignored.

In general, animal research indicates that the effects of substance use on aggression are extremely diverse, depending not only on the specific substance but also on dosage, duration of use, and situational factors, such as the position of the animal in the dominance structure (Fagan, 1989a, pp. 248-258; Reiss & Roth, 1993, pp. 189-195). A striking finding in this literature is that some illicit

drugs, such as marijuana and opiates, lower rather than raise rates of aggressiveness (except during withdrawal from addiction). Other drugs, such as cocaine, amphetamines, and PCP, are associated with violence only as an occasional secondary feature of generalized disorganization in behavior, which may correspond to paranoia or psychosis in humans. The most definite finding from animal research is that low doses of alcohol produce aggressive behavior in a wide range of species from fish through primates.

Laboratory Research With Humans

A substantial amount of research has been conducted on the effects of intoxication on aggression by human subjects in controlled laboratory settings. These studies, recently reviewed by Bushman and Cooper (1990), have assessed violence through analog tasks in which subjects are instructed to press a button to deliver an electric shock to another subject (actually a confederate of the researcher). Most often the subject is instructed to serve as a “teacher” who is punishing a “learner” for errors, but the experiment is sometimes cast as a reaction time contest in which the slower subject receives a shock. The subjects in the study are actually being deceived about the effects of their actions, for no shocks are actually delivered. Most studies concern the effects of alcohol, and in the vast majority of studies the subjects are male college students with a history of light social drinking.

One of the purposes of this research design is to vary expectancies associated with alcohol as well as the actual intoxication from alcohol. Substances such as peppermint are used to mask the taste of alcohol and subjects are randomly assigned to groups that are or are not informed that they are receiving alcohol and groups that do or do not receive alcohol. The purpose is to clarify whether aggression results from the alcohol itself or from culturally based expectations that alcohol will have such an effect. Bushman and Cooper’s (1990) careful meta-analysis, which combined quantitative results from more than 30 studies, leads to the surprising conclusion that the research design simply does not work well for this purpose. Those subjects who knowingly received alcohol were only slightly more aggressive than those in simple control groups (who received no alcohol and were not led to believe they would) and were considerably more aggressive than those in placebo groups (who were led to believe they would receive alcohol but did not). These results have the implausible implication that alcohol would bring about even more aggressiveness if not for expectations that alcohol will have a counter-aggressive effect. It seems that the experimental manipulations simply do not create the intended conditions.

The reliance of this line of research on analogs to aggressive or violent behavior also is problematic. Gottfredson and Hirschi (1993) argued that these laboratory tasks are essentially irrelevant to ordinary human violence. They pointed out the similarity between the “teacher/learner” task and Milgram’s famous paradigm for studying obedience to authority. In effect, the violent act has been taken out of its usual context of a dispute between interacting parties, one of whom has chosen to violate the conventional standards of behavior proscribed by authority figures. Instead, it is placed in a fictitious context where an authority figure instructs the actor to administer pain to an unseen stranger to advance a scientific aim. It does not appear that this approach is useful for advancing knowledge about substance use and violence.

Naturalistic Studies of the Effects of Intoxication

Several types of research on intoxication and violence forgo the experimental control of the laboratory setting in favor of natural settings (Fagan, 1989a, pp. 270-276). Ethnographic and qualitative studies, such as Burns's (1980) detailed description of an evening of drinking, socializing, and fighting by four young males, have the potential to provide well-focused insights into the links between social settings, peer influence, substance use, and violence. Comparative studies of substance use in various cultures help distinguish which behaviors associated with substance use are a product of intoxication itself and which are a function of cultural expectations concerning substance use. Survey research in which respondents are asked if they had used substances prior to conducting specific illegal acts (Elliott et al., 1989, pp. 172-175) helps clarify the degree of association between the two behaviors.

A meaningful summary of this diverse body of work is beyond the scope of this paper. Suffice it to say that the connection between substance use and violence varies tremendously among cultures and among social settings within cultures (Fagan, 1989a). For instance, in many cultures drinking is associated with fighting, but in many others fighting is rare in the presence of equally heavy drinking. Within U.S. culture, drinking occurs in varied but circumscribed settings, as does violence. Nevertheless, the overlap between these two sets of settings is decidedly limited. Thus, whatever the pharmacological connection between alcohol and violence, it is most decidedly bounded by social and cultural factors.

Adolescent Violence and the Drug Economy

Systemic violence is the final category in Goldstein's (1985) tripartite conception of the relationship between drug use and violence. This category refers to violence that arises from the sales and distribution activities that constitute the drug economy. Goldstein excluded violence that users commit to obtain money for drugs; such acts are included in his category of economic violence, discussed earlier. The National Research Council panel recognized that systemic violence stems not from the intoxicating nature of these drugs but rather from the economic consequences of their illegality: "The artificially raised prices create excess profits for drug dealers, which raises the stakes in disputes about marketing practices. Since these illegal markets are not subject to legal dispute resolution mechanisms, violence may be a first resort" (Reiss & Roth, 1993, p. 200). Systemic violence may emerge between any of the parties involved in the illegal drug trade: among distributors (e.g., over control of markets), between distributors and customers (e.g., over timely payment), within sales organizations (e.g., over missing funds), or between distributors and the general community (e.g., over reporting drug sales to the authorities).

Of the four types of relationships between violence and substance use discussed in this paper (demographic patterns, individual differences, effects of intoxication, and violence and the drug economy), the relationship between violence and the drug economy is the most difficult to study. Research on the criminal organizations involved in the drug economy is faced with obvious problems of access to information. Nevertheless, some creative researchers have gained access and provided valuable information to scholars and policy makers (e.g., Adler, 1985).

A more important difficulty is in judging how well results can be generalized. As Johnson et al. (1989) made clear in their review of the recent history of the drug problem in the United States, the economic organization of drug distribution has varied widely from time to time and place to place. It appears that the upper level of the cocaine trade is now dominated by a very different group than the middle-class whites described by Adler (1985) a decade ago. Even if a detailed and accurate picture were available of the links between the drug economy and adolescent violence, and even if clear policy implications were to follow from that picture, it is distinctly possible that the drug economy would change in ways that would make those policies irrelevant before they could be implemented.

Before the early 1980s, adolescents' involvement in the drug economy was generally assumed to be limited to small-scale distribution among peers. As the Italian mobsters' domination of the national drug market gave way to members of various minority groups, innovations in street-level marketing arose (Johnson et al., 1989). The Young Boys heroin distribution organization in Detroit distinguished a number of roles in the transaction, such as lookout, drug carrier, money carrier, and enforcer (Mieczkowski, 1986), and juveniles became desirable for several of these roles (supposedly because they were not subject to long prison terms⁴). On the West Coast, emerging crack cocaine markets are said to have become dominated by African-American and Latino street gangs. Thus, adolescents appear to play a large part in today's drug economy.

The connection between violence and the drug economy has been especially pronounced since the mid-1980s, as crack cocaine became the dominant drug in many inner cities. Distribution of crack cocaine has been through small groups that form loosely connected networks. Perhaps because of the lack of central organization, the young age of the participants, their particularly impoverished backgrounds, and the widespread availability of firearms, crack cocaine distribution has been associated with especially high rates of violence (Reiss & Roth, 1993, p. 204). Pervasive media reports of violence associated with crack distribution are in accord with especially high rates of homicide and of arrests for drug offenses in many urban areas during this time. The most striking systematic evidence is from Goldstein et al.'s (1989) study of 414 homicides in New York during 1988, 39% of which were tied to the drug economy. Klein, Maxson, and Cunningham (1991) reported that the proportion of drug-related homicides rose substantially during the explosive growth of crack cocaine drug sales in Los Angeles from 1983 through 1985.

Nevertheless, one must not be too quick to assume that the drug economy is a major source of adolescent violence. Because street gangs are widely associated with the drug trade and with violence, a widespread perception exists that these phenomena are essentially the same. Fagan's (1989b) data about street gangs in three cities and Klein et al.'s (1991) data on gangs in Los Angeles refute this perception. Fagan found that gangs varied widely both in levels of violence and in levels of involvement in the illegal drug trade and that these two features were not related. The violence of a gang was associated with its cohesion and social organization, not with the sale of drugs. Klein et al. reported that gang homicides were no more likely to involve drug sales than were nongang homicides.

Klein et al. (1991) also found that street gangs were much less prominent in the drug trade than had been widely reported in the media. Although street gang involvement in drug sales grew rapidly

during the time period covered by their study, it was far from dominant. Gang members figured in no more than 25% of arrests for drug sales, even though the study concentrated on areas with high rates of both participation and drug use. Furthermore, their figures indicate that claims about increases in juvenile involvement in the drug economy quite likely are overstated. The researchers did find that gang members arrested for drug sales had a lower average age than nonmembers. However, even among these gang members, the average age was 22 and few were juveniles. These two findings leave only a small role for adolescents in the drug economy.

As the National Research Council panel pointed out, “Illegal drug markets are magnets for risk-seeking persons carrying weapons and valuables and for potential victims. It seems clear that violent drug market participants behave violently outside the drug market as well” (Reiss & Roth, 1993, p. 203). The general criminality of actors in the drug trade is made clear by Inciardi’s (1990) data on a southern Florida sample of adolescents selected for high levels of both delinquency and illicit drug use. Most of these youth had been involved in the drug trade to at least some degree, and the deeper their involvement, the higher were their rates of violent behavior. It is clear, however, that their violence was more a function of a broad tendency to break the law than of their participation in the drug trade. Indeed, their involvement in the drug trade was less strongly associated with violence than with crimes that should be irrelevant to or incompatible with serious participation in the drug trade, such as burglary, car theft, and vandalism.

Despite the limited number of studies in this area, several conclusions can be made that provide useful perspective on the relationship of the drug economy to adolescent violence. First, the illegal drug trade creates opportunities for violence that would not otherwise be present. Eliminating the drug economy should therefore produce at least some reduction in violence. Second, the distinctive features of the systemic relationship between substance use and violence are largely unrelated to the intoxicating effects of these substances. Instead, the problem is one of illegal markets and organized crime (Reiss & Roth, 1990, p. 202). Third, the current problem of extreme (and perhaps youth) violence associated with inner-city crack distribution has arisen from particular historical circumstances that have not been characteristic of the drug economy more generally. Finally, much of the violence associated with the drug trade appears to be due to the recruitment of violent groups and individuals and the location of the trade in violent communities (Reiss & Roth, 1993, pp. 204-205). A large share of this violence would remain without the drug trade.

Policy Implications

Each of the four types of relationships considered in this paper has different implications for public policy. Because the focus of this volume is on youth violence, I emphasize in this section the goal of reducing youth violence over the goal of reducing substance use.

Societal Trends

Reviewing the similarity of demographic patterns of substance use and violence is helpful for assessing whether a decline in adolescent violence would likely follow from a broad reduction in adolescent substance use. Demographic patterns show that rates of substance use have fallen

dramatically since 1980, yet adolescent violence has increased or remained unchanged. Whatever broad societal trends account for the increase in violence, the overall rate of adolescents' use of intoxicating substances does not appear to be prominent among them. More likely possibilities would be changing values, community disorganization, economic hardship, and so forth.

A better case might be made for a connection between adolescent violence and the illegal drug economy. The nature of the drug economy has changed dramatically in recent years, and it is now associated with greater violence and somewhat greater involvement by adolescents than ever before. Although this connection applies to only a small proportion of adolescents and of violent acts, it involves some of the most severe violence. Even so, the few studies of this topic caution us that the specific contribution of the drug economy to adolescent violence is less than may be widely assumed. Gang violence appears to exist largely independent of a gang's involvement in the drug trade. Further, the communities with the greatest problems have high rates of violence apart from the drug trade, and individuals who commit violent acts as part of the drug trade commit violent acts elsewhere as well.

Stopping the drug trade could be expected to produce some reduction in particular types of serious youth violence because it would eliminate a specific set of opportunities for violence, such as robbery motivated by the incentives of dealers' money and drugs or by the vulnerability of intoxicated users. Of course, this is easier said than done. The drug trade would evaporate if drug use stopped, yet absolute elimination of drug use is unlikely, and recent history shows that even a sizable reduction in drug use is not sufficient to slow the drug trade. A radical possibility would be to legalize the now illicit drugs. Doing so would certainly disrupt the drug economy. In the current political landscape of the United States, however, the legalization of illicit drugs appears no more likely than the total elimination of illicit drug use.

Perhaps a more effective approach would be to concentrate on developing law enforcement strategies that put pressure on participants in the drug economy to adopt less destructive practices. Participants today recruit more juveniles and rely more on violence than they did in the past. It is worth exploring policies aimed at reducing any competitive advantages to those practices. Law enforcement agencies could concentrate their investigative resources on those specific practices, and legislative bodies could assign the most severe criminal penalties to drug offenses that involve minors in the drug trade and to offenses that involve the use of weapons. The message might be made even clearer to drug trade participants if some of the extreme criminal penalties for possession and sale of smaller amounts of illegal drugs were concurrently reduced. If those penalties are too high, the marginal cost of a longer sentence for use of weapons or for involvement of minors may have little influence.

Individual-Level Violence

Scientific evidence does not indicate that substance use makes an independent contribution to adolescent violence at the individual level. Still to be explored, however, is the contribution of substance use to the continuation of violence by individuals who otherwise would have stopped

committing violent acts. Available research does not support substance abuse treatment as a method for reducing adolescent violence.

The main reason that violent individuals also tend to use intoxicating substances appears to be that many of the same causes lead to both behaviors. Thus, treatment for violent behavior, substance use, and other deviant or problem behaviors should address themes that all have in common. Of course, programs that address violent behavior should focus on why an adolescent considers violence an appropriate means of resolving a dispute. They should also focus on why he or she is so willing to engage in risky and dangerous behavior and on any failures in social integration in the conventional domains of adolescent life.

Violence During Intoxication

Research has shown that rates of violence can be more pronounced during intoxication than at other times, but this relationship is highly dependent on the specific setting and the individuals involved. Efforts to reduce levels of intoxication may be productive for such purposes as reducing traffic fatalities. It is not obvious, however, where one would target efforts to reduce intoxication in order to reduce youth violence. The most likely approach would be to focus attention on settings where alcohol consumption coincides with violence. In other words, it might be more effective to concentrate on reducing consumption in the most problematic circumstances than to focus on eliminating consumption altogether. The research literature is not sufficiently developed to pinpoint the nature of those circumstances, but law enforcement agencies may be able to determine the relevant settings in specific jurisdictions.

Gaps in Knowledge and Recommendations for Future Research

Although a great deal of useful information has been published on the relationship between substance use and adolescent violence, there are, of course, gaps within this body of knowledge. Research has emphasized the kinds of information that is most easily obtained, but such studies have yielded relatively little information on some of the most serious aspects of the problem. For instance, little has been reported concerning sexual assault. Researchers should seek to expand the knowledge base to cover all important aspects of youth violence and substance use. In light of the limits to funding and to research methods, it may be more prudent to generalize from high-quality research on less serious offending than to conduct expensive low-quality studies just to ensure broader coverage.

The section of this paper concerning demographic trends relied heavily on consistent national data sources that were developed in recent decades. It is now possible to assess the convergence of data on self-reported offending, self-reported victimization, arrests, and assorted sources such as blood levels of alcohol in people involved in traffic accidents and drug tests of arrestees. Additional sources of data, such as records of hospital admissions for substance use, also are becoming available. The longer the data sources exist to provide annual comparisons, the more valuable they are for tracking major social problems. I strongly encourage expanded investment in such data sources and in systematic reporting of the data. Further, the reports of the statistics on violence and substance use could be expanded to provide even more useful information to researchers and policy

makers. For instance, it is well established that age is strongly related to rates of offending and victimization and that the age composition of the population changes over time (especially for the proportion in the narrow range most relevant to crime). Changes in rates of violence and substance use have very different implications if they are a function of such a simple demographic trend than if they are not. Thus, it would be a worthy investment of government resources to routinely produce age-standardized statistics.

The research indicates that the association between adolescent violence and substance use at the individual level is most reasonably viewed in light of a positive correlation between deviant or problem behaviors in general. Research activity in this area has increased considerably in recent years, and understanding of the degree of consistency in these relationships and of their evolution over time is growing rapidly. Researchers in this area face statistical problems because of the highly skewed distributions of these relatively rare phenomena, which add considerable imprecision to results generated by standard techniques used in almost all studies. Research on this topic would be considerably enhanced by the use of statistical methods that take these distributions into account (Osgood & Rowe, 1994). Also, sophisticated causal modeling is needed to advance understanding of which causes of these behaviors contribute to a general involvement in deviance and which causes are specific to particular behaviors. The focus of funding sources on individual problems has promoted the proliferation of disparate research literatures on these highly related phenomena. This lack of integration is nowhere more evident than in the large body of work on intoxication and violence, which seems to have proceeded largely in ignorance of the unremarkable level of association between the two behaviors. It would be useful to promote research that is integrative across problem behaviors.

Finally, research on intoxication and violence would benefit from greater attention to the situational nature of violence. Research to date demonstrates that the association between the two behaviors is specific to settings, yet it is not well informed by analyses of the settings in which adolescents use intoxicating substances or in which violence tends to arise between adolescents.

Research on variation in substance use practices and violence has been associated with theoretical work emphasizing the role of cultural and group-based expectancies and disavowal of deviance that occurs during intoxication. This emphasis on settings also would mesh well with an important line of research on violence that has as yet remained independent from the study of substance use, namely, research that views violent incidents as situated transactions between victim and offender (e.g., Felson & Steadman, 1983; Luckenbill, 1977). This perspective is helpful for pointing out the close relationship between victimization and offending, as seen in the large share of violent incidents involving disputes in which those roles are essentially interchangeable. Thus, this perspective helps provide an emphasis on the victim that is essentially absent from the literature on substance abuse and adolescent violence. The emerging social interactionist perspective on violence (Felson & Tedeschi, 1993) seems especially promising as a basis for elaborating these theoretical approaches and guiding research in this area. It would be a potential basis for either naturalistic or laboratory research focused on the interactional and attributional processes that determine whether grievances escalate to violence. Especially promising would be to study the impact of substance use on these processes through its effects on judgment and information processing (Pihl, Peterson, & Lau, 1993).

NOTES

1. Arrest statistics for drug offenses are not very informative here because they do not distinguish sales and distribution of illicit drugs from drug use.
2. In this paper I make considerable use of data from the Monitoring the Future study. Readers may wonder about the utility of a study that is based on high school seniors and thereby excludes dropouts—a group with especially high rates of substance use. This limitation does not appear problematic, however, because all of the conclusions I derive from this study are supported by other studies of self-reported substance use and violence (e.g., the National Youth Survey and the National Household Survey). The large samples studied each year over an extended period and the detailed statistics reported for a large number of substances make the Monitoring the Future data especially useful (Johnston et al., 1993a, 1993b). In addition, in recent years the Monitoring the Future study has included samples of 8th and 10th graders. These data greatly strengthen the study because school dropout is far more limited in 8th and 10th grade than in 12th grade.
3. Elliott et al. (1989) also related the substance use types to several other indexes of delinquency. The more summary indexes such as index offending and general delinquency are not useful here because they combine violent offenses and other offenses. The relationships of substance use to illegal services and public disorder are misleading because the former relationship includes sales of alcohol and illicit drugs and the latter includes public drunkenness.
4. There seems to be widespread agreement on this point, even among adolescent drug dealers (Dembo, Hughes, Jackson, & Mieczkowski, 1993). It is difficult to believe, however, that adult drug distributors would be especially concerned about shielding their associates from harsh legal penalties, which they risk themselves. Logically, the lighter penalties would be most useful as a tool for recruiting younger assistants but would seem to be relevant only if there were a shortage of adults interested in joining the drug trade. I suspect that, from the perspective of individuals recruiting (or permitting) others to join the drug trade, the more important factors are that juvenile underlings are less likely to challenge higher-ups and will work for lower pay.

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Table 1				
Prevalence of Violence and Other Offenses by Drug User Type, From the National Youth Survey: Percent Reporting One or More Offenses in the Past 12 Months				
Drug user types				
Offense	Nonuser	Alcohol User	Marijuana User	Polydrug User
Violent offenses				
Felony assault				
1976	12.7	18.3	33.8	51.7
1980	4.1	5.2	13.5	24.2
1983	1.0	4.6	11.4	16.7
Robbery				
1976	4.0	5.7	6.8	22.4
1980	0.8	0.4	2.8	6.4
1983 ^a	----	----	----	----
Minor Assault				
1976	45.4	59.5	65.3	72.4
1980	17.2	19.0	23.3	29.9
1983	3.0	6.2	5.3	15.7
Other Offenses				
Felony theft				
1976	6.3	18.6	32.4	55.2
1980	2.3	4.4	13.5	27.3
1983	2.0	3.4	9.8	28.3
Minor theft				
1976	12.6	33.7	49.3	50.0
1980	4.6	10.7	23.2	36.4
1983	4.0	6.7	14.4	27.0
Vandalism				
1976	30.6	40.5	56.8	62.1
1980	9.7	12.3	19.7	31.2
1983	1.7	3.9	8.0	19.0

Note. From Elliott, D.S., Huizinga, D., & Menard, S. (1989). *Multiple Problem Youth: Delinquency, Substance Use, and Mental Health Problems*, (p. 60). New York, NY: Springer-Verlag. N = approximately 1,700, ages 11-17 in 1976.

^aToo few robberies were reported for meaningful analysis.

Table 2
Correlations of Substance Use With Violence and Other Delinquent Acts, From Monitoring the Future Study

Substance	Violence	Theft	Property Damage	General Delinquency
Alcohol	.219	.316	.209	.332
Marijuana	.221	.348	.214	.354
LSD	.211	.250	.232	.294
Hallucinogens	.216	.235	.208	.279
Cocaine	.208	.240	.183	.274
Amphetamines	.205	.249	.196	.280
Quaaludes	.234	.203	.184	.262
Barbituates	.210	.195	.195	.250
Tranquilizers	.207	.201	.178	.247
Heroin	.130	.101	.131	.144
Narcotics	.194	.209	.188	.252
Inhalants	.133	.166	.116	.185
All substances	.316	.406	.294	.446
All substances except alcohol and marijuana	.301	.331	.275	.390

Note. These correlation coefficients are based on archived data for high school seniors of 1980, 1984, and 1988. All measures refer to behavior reported for the previous 12 months. Weighted N = approximately 9,100. All correlations are statistically significant with $p < .01$.