



OJJDP  
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## Pathways to Desistance

How and why do many serious adolescent offenders stop offending while others continue to commit crimes? This series of bulletins presents findings from the Pathways to Desistance Study, a multidisciplinary investigation that attempts to answer this question.

Investigators interviewed 1,354 young offenders from Philadelphia and Phoenix for 7 years after their convictions to learn what factors (e.g., individual maturation, life changes, and involvement with the criminal justice system) lead youth who have committed serious offenses to persist in or desist from offending.

As a result of these interviews and a review of official records, researchers have collected the most comprehensive dataset available about serious adolescent offenders and their lives in late adolescence and early adulthood.

These data provide an unprecedented look at how young people mature out of offending and what the justice system can do to promote positive changes in the lives of these youth.

## Substance Use and Delinquent Behavior Among Serious Adolescent Offenders

Edward P. Mulvey, Carol A. Schubert, and Laurie Chassin

### Highlights

The Pathways to Desistance study followed more than 1,300 serious juvenile offenders for 7 years after their conviction. In this bulletin, the authors present some key findings on the link between adolescent substance use and serious offending:

- Serious/chronic offenders are much more likely than other juvenile offenders to be substance users and to qualify as having substance use disorders. Substance use and offending at one age is a consistent predictor of continued serious offending at a later age.
- Dispositional factors (e.g., sensation seeking, behavioral disinhibition, poor affect regulation, stress, depression) can lead to “externalizing” behaviors such as substance use and criminal activity.
- Substance use and serious offending fluctuate in similar patterns over time, suggesting a reciprocal or sequential relationship, but no causal relationship has been proven.
- Substance use and serious offending decrease in late adolescence. Understanding the factors that enable youth to desist from these behaviors as they learn new skills and mature may reveal avenues for intervention.



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## Substance Use and Delinquent Behavior Among Serious Adolescent Offenders

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### Introduction

The nexus between substance use and offending during adolescence has important implications for juvenile justice interventions. Many of the adolescents who get in trouble with the law have problems with substance use, and their offending is tied to their involvement with drugs or alcohol. Gaining a deeper understanding of the dynamic ebb and flow of these behaviors is critical to refining treatment approaches and more effectively targeting prevention efforts for adolescent offenders. The right intervention at the right time in the development of these offenders could forestall a lifetime of substance use and offending that fuel each other in a destructive pattern.

Much work has been done on the relationship between adolescent substance use and offending, but most studies have focused on general community samples or samples of at-risk youth as they begin to engage in these behaviors. These efforts have produced a sizable literature documenting the factors related to the onset or maintenance of these behaviors independently of each other. Less research has focused on the reciprocal effects of these behaviors on each other during adolescence. Also lacking is a clear understanding of how these behaviors play out beyond the point in early adulthood when youth with established histories of offending and substance use cease one behavior or the other (see Hussong et al., 2004, for an exception). Information gathered from this vantage point, joined with extant research, will contribute to a more complete understanding of the link between substance use and offending and will enhance the knowledge base available to juvenile justice policymakers and practitioners.

One OJJDP-sponsored longitudinal study offers a particularly detailed and rich picture of substance use and offending in serious adolescent offenders over time, using

regular interviews conducted over a period of 7 years after court involvement. The study, *Pathways to Desistance: A Prospective Study of Serious Adolescent Offenders*, follows a large sample of serious (overwhelmingly felony) offenders into early adulthood, providing insight into changes across multiple life domains that contribute to offenders' desisting from or persisting in antisocial activities (Mulvey et al., 2004) (see "About the Pathways to Desistance Study" on p. 8).<sup>1</sup> The Pathways study is important to the juvenile justice field because serious offenders, such as those followed in this study, drive much of the policy debate in juvenile justice (Greenwood, 2006) and present the system with some of its most vexing practical challenges. Among its many goals, the study tests whether the relationships between substance use and offending observed in previous studies of community-based youth or youth in detention also hold for individuals who have more serious and/or chronic problems. The study also observes the joint desistance process for substance use and offending.

This bulletin describes what is known about the relationships between substance use and offending based on extant research and the Pathways data. It is the beginning, rather than the end, of an involved story. Researchers have observed several interesting and relevant relationships between these behaviors in the sample overall and in individuals during the 2-year period following their court involvement. These findings contribute to a deeper understanding of how substance use and offending interact and affect the desistance process in these adolescents.

### What Do We Know?

Several general statements seem warranted, given previous research on this topic.

## Substance Use Problems and Serious Delinquency Are Linked

Researchers consistently find a strong link between substance use problems and serious delinquency, regardless of how they structure the inquiry.

- Studies of youth in juvenile court demonstrate that a majority of court-involved adolescents have recently used illegal substances and that more serious and chronic adolescent offenders have used more substances and are more likely to qualify for a diagnosis of a substance use disorder (Arrestee Drug Abuse Monitoring Program, 1999; Huizinga and Jakob-Chien, 1998; Wilson et al., 2001; Teplin et al., 2002).
- Investigators who study large samples of community youth observe a strong association between reported serious offending and substance use in these groups (Johnston, O'Malley, and Bachman, 2006; Ford, 2005).
- Researchers who follow adolescent offenders over time find that substance use at one age is one of the most consistent indicators of continued serious offending at a later age (Dembo et al., 1993; Lipsey and Derzon, 1998; Dembo, Wareham, and Schmeidler, 2007; D'Amico et al., 2008; Hussong et al., 2004).

The issue of when and how individuals develop these co-occurring patterns of substance use and illegal activity is less clear. Some of the same factors that put an individual at risk for involvement in criminality also put that individual at risk for substance use problems (Hawkins, Catalano, and Miller, 1992; Iacono, Malone, and McGue, 2008; Marmorstein, Iacono, and McGue, 2009). Parental substance use disorders, poor parenting, conflictual family environments, and dispositional factors such as sensation seeking and behavioral disinhibition place an adolescent at higher risk of using drugs and alcohol and/or engaging in illegal acts (Hawkins, Catalano, and Miller, 1992).

In addition, adolescents with poor affect regulation, high levels of environmental stress, or depression may use drugs and alcohol to medicate themselves as a coping mechanism. However, these relations are less consistently found—especially once “externalizing behaviors” (e.g., substance use and criminal offending) are considered—and often appear in complex interactions (Hersh and Hussong, 2009). The relation between negative mood and alcohol use has been reported to be stronger among adolescents with *fewer* conduct problems (Hussong, Gould, and Hersh, 2008).

## Substance Use and Offending Fluctuate in Similar Patterns Over Time

It is clear that these two behaviors are associated over time, although there does not seem to be a clear progression from one to the other. Several investigators report evidence that behavior problems and aggression at a younger age predict later adolescent illicit substance use (Henry, Tolan, and Gorman-Smith, 2001; Kellam et al., 1983; Mason, Hitchings, and Spoth, 2007; Wiesner, Kim, and Capaldi, 2005), escalations in use over time (Hussong and Chassin, 1998), and later diagnoses of substance abuse and dependence (Chassin et al., 1999; Disney et al., 1999). In addition, studies suggest that early substance use predicts subsequent criminal behavior in adolescents (Huizinga, Loeber, and Thornberry, 1995; Bui, Ellickson, and Bell, 2000; Ford, 2005; French et al., 2000; Loeber and Farrington, 2000).

Recent advances in statistical methods (e.g., joint trajectory analyses) have produced other insights into this temporal relationship. Joint trajectory analyses allow the researcher to examine the comparability of the patterns of these two behaviors as they progress over the same time period (Nagin, 2005). Research using this technique has demonstrated that criminal behavior and substance use follow parallel courses over time (Sullivan and Hamilton, 2007), suggesting a reciprocal relationship between the two behaviors. Whether the relationship is sequential or reciprocal can be debated; it may be that the relationship follows different patterns in different groups of youth. It is clear, however, that delinquent behavior and substance use problems go hand in hand in adolescence.

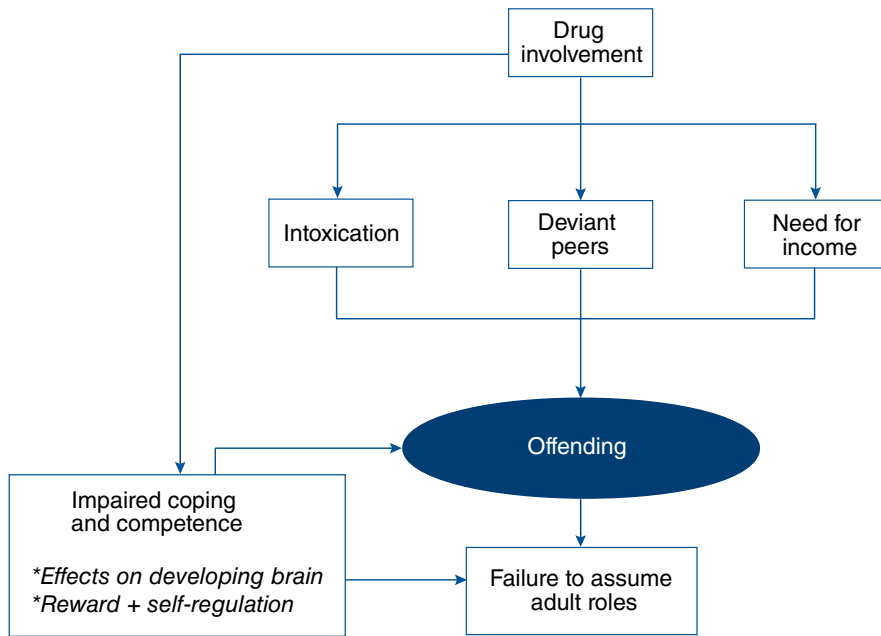
## Multiple Mechanisms May Link the Behaviors

Substance use and delinquency can interrelate in several ways over the course of adolescence to promote dual involvement and set the stage for a difficult entry into young adulthood.

Substance use in and of itself is certainly not the primary cause of involvement in illegal activity. Substance use, however, may initiate or heighten the risk of offending either independently or in conjunction with other risk factors. There are several ideas about the ways that substance use might exert this effect, as illustrated in figure 1.

Substance use and offending might have a simple reciprocal relationship. “Being high” can lower inhibitions against involvement in criminal acts (a psychopharmacological explanation), and/or committing crime might be a way to obtain funds to support substance use (an instrumental explanation) (White et al., 2002; Goldstein, 1985). According to this formulation, one behavior indicates that the other behavior is more likely to occur.

Figure 1. Factors That May Link Substance Use and Offending in Adolescents



As described earlier, substance use and offending might also be linked because they are both driven by common causes such as parental substance use disorders, disrupted and conflictual family environments, or shared dispositional risk factors. For example, Young and colleagues (2000) found a single spectrum that linked novelty seeking, conduct disorder, substance experimentation, and attention deficit/hyperactivity disorder in a sample of adolescent twins. One explanation is that a common tendency toward novelty seeking and difficulty with behavioral regulation leads to a variety of externalizing behaviors, including substance use and criminal offending. Alternatively, adolescents dealing with a particularly difficult or pervasive set of problems, like difficulties learning in school and a violent home life, might find escape in either substance use or illegal activity or both.

However, the common links are not necessarily limited to the individual adolescent. The influence of the peer group and/or neighborhood (social context) might determine the co-occurrence of substance use and offending. A large proportion of serious delinquent acts in mid- and late adolescence are committed in groups (Zimring, 1998), and substance use might be a particularly potent component of the group process (Mason et al., 2007). Alternatively, regular substance use may place adolescents in group situations where crime (particularly violence) is more likely (Goldstein, 1985; Fagan and Chin, 1991; MacCoun, Kilmer, and Reuter, 2003). Continued gang involvement, which increases the risk for crime and substance use during late adolescence (Thornberry, 1998; Thornberry et al., 2003), is an extreme case of this dynamic. Similarly, youth

who live in high-crime neighborhoods might be introduced to drug use or recruited for criminal activities at a disproportionate rate compared with youth who live in more stable neighborhoods (Ellickson and McGuigan, 2000; Little and Steinberg, 2006).

Finally, criminal offending and substance use may both be part of a process of delayed development. In the years following adolescence, an individual's continued drug or alcohol use may reduce his or her chances of a successful transition to developmentally appropriate adult roles such as employee, spouse, and parent (Chassin et al., 1999; Yamaguchi and Kandel, 1985). Adolescent substance use can produce a false sense of reality and autonomy that interferes with the development of emerging social competencies and coping skills (Baumrind and Moselle, 1985). Some data support this idea: Adolescents' illegal drug use predicts a lower level of autonomy

and less competence in young adulthood (Chassin, Pitts, and DeLucia, 1999), and adolescents in the juvenile justice system have a lower level of decisionmaking ability than do adolescents in the community who are of similar age and ethnic background (Grisso, 2004). However, the interplay among maturity, attainment of developmental competencies, drug use, and delinquency is largely unexplored terrain.

## Substance Use and Offending Decrease in Late Adolescence

Another intriguing question about these behaviors, aside from how they fuel each other during adolescence, is how and why they both usually cease in early adulthood. Many studies show that both substance use problems and delinquency start during mid-adolescence and then stop or sharply decrease for many individuals in their 20s and 30s (Arnett, 2000). Criminologists agree on the existence of an age-crime curve, which shows that the likelihood of both official and self-reported criminal activity decreases during late adolescence and early adulthood (Piquero et al., 2002), with less than half of serious adolescent offenders continuing their criminal career into adulthood (Redding, 1997). Notably, similar age curves are observed for alcohol and drug use, substance use problems, and substance use diagnoses (Chen and Kandel, 1995; Bachman et al., 2002). One or more processes during late adolescence and early adulthood cause some individuals who engaged in these activities when they were younger—even very serious offenders or heavy substance users—to stop altogether or slow down their rate of offending and/or substance use if they remain active.

It is also clear that this dropoff does not follow the same pattern for everyone. Numerous analyses of data on longitudinal criminal offending and substance use indicate that this change follows several different patterns over time. Some subgroups continue at a high rate, others stop quickly and completely, and still others drop off at different rates of decline or at later ages (Broidy et al., 2003; Bachman et al., 2002). Although differences in sampling strategies, outcome measures, and analytic approaches affect the number of groups and the shapes of the “dropoff” curves obtained, studies consistently find different pathways of desistance from both substance use problems and criminal involvement in the period from late adolescence to early adulthood. A better understanding of the life events or interventions that affect these pathways would have important implications for developing interventions to enhance the desistance process.

### Little Is Known About What Promotes Desistance

Several general mechanisms may promote desistance from substance use and/or criminal activity. One possibility is that normal developmental change in late adolescence and early adulthood makes criminal behavior and/or substance use less attractive or acceptable. As individuals become more mature socially, emotionally, and intellectually, changes in their moral reasoning, considerations regarding the future, impulse control, or susceptibility to peer influence may steer them away from antisocial, risky, and dangerous behavior and toward more socially desirable and safer activities (Keating, 2004; Steinberg and Cauffman, 1996). Immediate thrills and impressing friends hold less sway in the now larger picture of the world. In addition, individuals may acquire new skills (either personal or vocational) that lead to new opportunities and offer alternative forms of validation.

A different, but related, possibility is that the transition into adult roles (employment, family, and citizenship) promotes new behavioral patterns and demands that make involvement in antisocial activity less acceptable and rewarding (Cernkovich and Giordano, 2001; Hamil-Luker, Land, and Blau, 2004). Criminologists have long discussed the notion that increased involvement in “routine activities” should curb criminal involvement (Cohen and Felson, 1979; Osgood et al., 1996) because working at a job, engaging in more serious romantic relationships, starting a family, and fulfilling community roles should result in reduced exposure to settings where antisocial activities are the norm (Warr, 1998; Uggen and Manza, 2004; Sampson and Laub, 2003). In concrete terms, individuals who spend their daytime hours in a supervised workplace, their evening hours with their spouse and children, and their nighttime hours sleeping to rest for the next workday have little opportunity to engage in serious antisocial behaviors.

Evidence on substance abuse shows that adult role transitions are related to decreases in alcohol and drug use (Kandel and Yamaguchi, 1999; Bachman et al., 2002), and it is likely that regular fulfillment of activities related to adult roles also moves individuals out of the circles where criminal involvement is more prevalent and accepted.

A significant corollary of the general developmental view adds the dimension of social investment as a potentially important factor in this process (Laub, Nagin, and Sampson, 1998; Laub and Sampson, 2001). According to this view, it is not simply social roles that are important. Rather, the strength of individuals’ attachment and commitment to these new roles and opportunities plays a large part in determining whether they will continue their anti-social activities. If these new roles and opportunities create valued experiences (e.g., a loving relationship, respect as part of a work group) that are important to the individual offender, the individual increases his or her “social capital” (Portes, 1998) and may reach a point where the new lifestyle becomes a reality that is worth protecting. Once individuals form a commitment to work and family, they have something to lose and therefore something to guard. Many contend that positive change then occurs as an internal psychological realignment of self-conceptions takes hold (Kiecolt, 1994; Giordano, Cernkovich, and Rudolph, 2002); that is, an individual takes a proactive role in creating new opportunities for positive social involvement and integrates experiences and opportunities in light of a newfound, “reformed” self (Shover, 1996; Maruna, 2001).

In short, many substance-abusing juvenile offenders will desist from one or both of these behaviors in early adulthood, but very little is known about how these processes of desistance operate or what factors influence them. Without longitudinal information about the interaction of these two antisocial behaviors over time, it is difficult to guide the design of effective programs and policies for these adolescents.

### Evidence From the Pathways to Desistance Study

The data in the Pathways study will increase understanding of the dynamics between substance use and criminal offending among serious adolescent offenders, individuals for whom interventions (either treatment or sanction oriented) would seem most appropriate and could hold considerable promise. It is not apparent that the relationships seen in broader samples of adolescents hold for this more restricted and problematic group of offenders. The relationship of substance use to offending over time may not be as powerful in a group of serious adolescent offenders, where both of these behaviors are more common. In addition, intervention and monitoring may be less



effective, considering that these adolescents may be more established in a substance-using and criminal lifestyle.

The initial analyses presented in this bulletin include the early followup periods of the study and focus on several basic questions about the level of substance use problems found in this sample and the relationship of substance use and substance use problems to offending. Some interesting regularities emerge in these early followup periods, and the research team continues to examine these issues in ongoing analyses. Following is a summary of findings to date on several key issues.

## Levels of Substance Use and Substance Use Problems Are High in Serious Offenders

Researchers examined baseline data and followup interviews to address this issue, providing insight into the patterns of substance use and substance use problems found in these adolescents at the time of their involvement with the court and in the subsequent 2-year period. In general, analysis found that reported substance use and substance use problems were both very high in this sample. The baseline data yielded the following information:

- Eighty-five percent of the sample reported using marijuana at some point in their lives, 80 percent reported using alcohol, 25 percent hallucinogens, 23 percent cocaine, 21 percent sedatives, 15 percent stimulants, 13 percent inhalants, 7 percent opiates, 16 percent ecstasy, 4 percent amyl nitrate odorizers, and 6 percent reported using some “other” drug at some point in their life.
- Forty percent of the participants reported consuming alcohol in the past 6 months, averaging between one and three times per month.
- Fifty-seven percent of the participants reported using marijuana in the past 6 months, averaging between one and three times per week.

- Twenty-seven percent reported using other illegal drugs (i.e., cocaine, hallucinogens, sedatives, inhalants, opiates, ecstasy, amyl nitrate odorizers, or “other”) an average of one or two times in the past 6 months.

The baseline data reveal considerable use of multiple substances. At the time of the baseline interview, approximately 48 percent of the sample reported having used more than one substance in the past 6 months. More than one-half (57 percent) of the sizable proportion of youth who reported using marijuana in the past 6 months also reported drinking alcohol, and 77 percent of youth who reported drinking alcohol in the past 6 months also reported using marijuana in that same time period. At each followup interview, 28 to 30 percent of the sample reported using more than one substance in the previous 6 months.

At the same time, a considerable proportion of the sample reported very limited substance use over the 24-month followup period. Approximately 26 percent of the sample reported no alcohol use during this period, 34 percent reported no marijuana use, and 64 percent reported no use of other drugs. Approximately 19 percent of the sample reported no use of any type of substance over the 24-month followup period.

For many of these adolescents, however, substance use and the resulting problems have reached a point of clinical concern. A substantial number of adolescents in the sample have diagnosable substance use disorders, based on criteria in the *Diagnostic and Statistical Manual of Mental Disorders, Fourth Edition (DSM-IV)* (American Psychiatric Association, 2000).<sup>2</sup> According to the *DSM-IV*, alcohol/drug abuse is characterized by the persistence of the substance use despite repeated negative consequences such as problems with work, school, and relationships. Alcohol/drug dependence is characterized by an inability to control or limit use; the development of tolerance (a need for increased dosages to achieve the same effect) and withdrawal symptoms are two indicators of substance dependence. In the Pathways data, at baseline, 37 percent of male participants and 35 percent of female participants met

*“Adolescent substance use can produce a false sense of reality and autonomy that interferes with the development of emerging social competencies and coping skills.”*

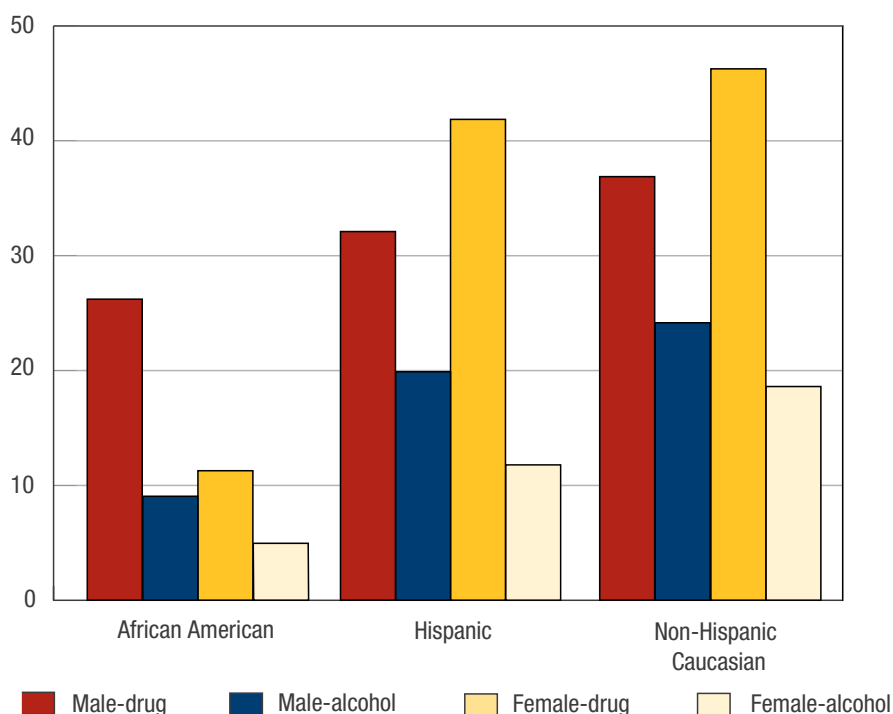
the *DSM-IV* diagnostic threshold for drug or alcohol abuse/dependence. These rates of disorder are approximately three to four times higher than those seen in samples of a comparable age group within the community as a whole (Lewinsohn et al., 1993; Substance Abuse and Mental Health Services Administration, 2003).

Substance use is also linked to other illegal activities in this group. The presence of a drug or alcohol disorder and the level of substance use were both shown to be strongly and independently related to the level of self-reported offending and the number of arrests. This relationship held even when drug-related offenses and behaviors were removed from the offending measures and when a variety of covariates (i.e., socio-economic status, gender, and ethnicity) were controlled statistically.

There are strong, consistent relationships among ethnicity, gender, and substance use problems in this sample. African American adolescents have fewer symptoms of substance use dependence and social consequences from substance use than do Hispanic adolescents, and Hispanic adolescents have fewer symptoms or consequences than do white adolescents. Females also report significantly lower levels of dependence symptoms and social consequences, although with the same pattern of ethnic differences as shown for males. As seen in figure 2, African American adolescents are least likely to meet the diagnostic threshold for substance use disorder in the year prior to enrollment in the study. (This pattern also was found in other samples of juvenile offenders; see Teplin et al., 2002.)

The pattern of ethnic differences is also found in non-adjudicated community samples (Armstrong and Costello, 2002), indicating that some consistently powerful cultural/ethnic factors appear to operate in the lives of these serious offenders and also in their less antisocial community

Figure 2. Percentage of Pathways Study Sample Meeting Diagnostic Threshold for Substance Use Disorder in Year Before Administration of CIDI at Baseline Interview



counterparts. These findings may also indicate that there are likely significant variations in the role of substance use and offending among different ethnic/racial groups of serious offenders. The mechanisms behind these observed ethnicity effects, however, are complex and underexamined in both community and offender samples. Economic and neighborhood opportunity as well as cultural and familial factors undoubtedly play some significant roles in producing the widely observed differences in substance use among these groups.

The Pathways study provides the opportunity to examine a particular mechanism related to these ethnic differences, at least in relation to the Hispanic adolescents in the sample.<sup>3</sup> Pathways investigators used a subset of the Pathways sample (300 male Mexican-American offenders) to

## ABOUT THE PATHWAYS TO DESISTANCE STUDY

The Pathways to Desistance study is an ongoing multi-disciplinary, multisite longitudinal investigation of how serious juvenile offenders make the transition from adolescence to adulthood. It follows 1,354 young offenders from Philadelphia County, PA, and Maricopa County, AZ (metropolitan Phoenix), for 7 years after their conviction. This study has collected the most comprehensive data set currently available about serious adolescent offenders and their lives in late adolescence and early adulthood. It looks at the factors that lead youth who have committed serious offenses to persist in or desist from offending. Among the aims of the study are to:

- Identify initial patterns of how serious adolescent offenders stop antisocial activity.
- Describe the role of social context and developmental changes in promoting these positive changes.
- Compare the effects of sanctions and interventions in promoting these changes.

### Characteristics of Study Participants

Enrollment took place between November 2000 and March 2003, and the research team concluded data collection in 2010. Youth enrolled were 14 to 17 years old and had been found guilty of at least one serious (almost exclusively felony-level) violent crime, property offense, or drug offense. Although felony drug offenses are among the eligible charges, the study limited the proportion of male drug offenders to no more than 15 percent; this limit ensures a heterogeneous sample of serious offenders. Because investigators wanted to include a large enough sample of female offenders—a group neglected in previous research—this limit did not apply to female drug offenders. In addition, all youth whose cases were considered for trial in the adult criminal justice system were enrolled, regardless of the offense committed.

At the time of enrollment, participants were an average of 16.2 years old. The sample is 84 percent male and 80 percent minority (42 percent African American, 33 percent Hispanic, and 5 percent American Indian/other). Approximately one-third (32 percent) of study participants had no prior petitions to the juvenile court. Of those participants with prior petitions, 68 percent had two or more prior petitions; the average was 2.98 in Maricopa County and 2.72 in Philadelphia County. At both sites, more than 40 percent of the adolescents enrolled were adjudicated of felony crimes against persons (i.e., murder, robbery, aggravated assault, sex offenses, and kidnapping). At the time of the baseline interview for the study, 50 percent of these adolescents were in an institutional setting (usually

a residential treatment center), and during the 7 years after study enrollment, at least 85 percent of the sample spent some time in an institutional setting.

### Interview Methodology

Immediately after enrollment, researchers conducted a structured 4-hour baseline interview (in two sessions) with each adolescent. This interview included a thorough assessment of the adolescent's self-reported social background, developmental history, psychological functioning, psychosocial maturity, attitudes about illegal behavior, intelligence, school achievement and engagement, work experience, mental health, current and previous substance use and abuse, family and peer relationships, use of social services, and antisocial behavior.

After the baseline interview, researchers interviewed study participants every 6 months for the first 3 years, and annually thereafter. At each followup interview, researchers gathered information on the adolescent's self-reported behavior and experiences during the previous 6 months, including any illegal activity, drug or alcohol use, and involvement with treatment or other services. Youth's self-reports about illegal activities included information about the range, the number, and other circumstances of those activities (e.g., whether or not others took part). In addition, the followup interviews collected a wide range of information about changes in life situations (e.g., living arrangements and employment), developmental factors (e.g., likelihood of thinking about and planning for the future, and relationships with parents), and functional capacities (e.g., mental health symptoms).

Researchers also asked participants to report monthly about certain variables (e.g., school attendance, work performance, and involvement in interventions and sanctions) to maximize the amount of information obtained and to detect activity cycles shorter than the 6-month reporting period.

In addition to the interviews of study participants, for the first 3 years of the study, researchers annually interviewed a family member or friend about each study participant to validate the participants' responses. Each year, researchers also reviewed official records (local juvenile and adult court records, and FBI nationwide arrest records) for each adolescent.

Investigators have now completed the last (84-month) set of followup interviews, and the research team is completing the analysis of interview data. The study maintained the adolescents' participation throughout the project: At each followup interview point, researchers found and interviewed approximately 90 percent of the enrolled sample. Researchers have completed more than 24,000 interviews in all.





examine the relationship of cultural adaptation to patterns of heavy episodic drinking and marijuana use from ages 15 to 20 (Losoya et al., 2008). Because of the richness of the Pathways data, these analyses were able to identify clear patterns of cultural adjustment over this time period as well as control for time in a supervised environment.

Losoya and colleagues found that bicultural adaptation (i.e., successful adaptation to both the ethnic and mainstream cultures) is related to lower substance use. That is, youth who retain some of the values of their native culture while also adapting to the mainstream culture do better. This work goes beyond simple racial comparisons to gauge the power of cultural processes that might affect Mexican-American youth. It is also important because it is the first time that researchers have considered these developmental processes for serious offenders. In addition, these findings highlight the interaction of cultural values and beliefs with behavior—a reminder that racial comparisons alone do not reveal the full story of ethnic differences.

Investigators also examined how involvement in offenses related to drug dealing and substance use overlap. Although the proportion of drug offenders was capped at 15 percent of the sample for the Pathways study, it is still possible to get a glimpse of how drug offenders may differ from other types of offenders. Sixty-three percent of the individuals in the sample who had drug charges also met the diagnostic criteria (based on the Comprehensive International Diagnostic Interview [CIDI]) for a substance use disorder. This is a significantly higher proportion than for offenders whose presenting offense was not a drug charge (63 percent versus 40 percent).

It is important to keep in mind that the prevalence rates of substance use and substance use problems in the study sample do not represent those likely to be found in the broad sample of juvenile offenders appearing before the court. The adolescents in the Pathways sample were chosen because they had been adjudicated of a serious offense and the number of individuals charged with a drug offense was capped. However, these prevalence rates provide some information about the magnitude of these problems among adolescent offenders at the “deep end” of the juvenile justice system. The problem of substance use seems rather formidable. A vast majority of these offenders have notable histories of substance use, a large proportion have diagnosable problems, and there is a clear link between the level of offending and the level of substance use in this sample of serious offenders.

## Substance Use and Offending Appear To Have a Consistent Relationship

As noted earlier, offending and substance use and substance use problems appear to co-occur regularly in serious

offenders; that is, offenders with high scores on one self-report measure also have high scores on the other self-report measure. One advantage of a longitudinal design such as that used in the Pathways to Desistance study is that behaviors can be examined for the consistency of their relationship to each other over time in the same individual. For example, investigators can examine whether one behavior (e.g., a certain level of substance use) consistently precedes or follows another behavior (e.g., self-reported offending) in a series of observations of an individual over time. Investigators in the Pathways study conducted such an analysis to determine whether the level of substance use was systematically related to the level of reported offending over time.

This analysis used the structural equation modeling (SEM) method to determine whether increased substance use predicted increased self-reported offending in the next followup period or the reverse (i.e., increased offending predicted increased substance use). This model also controlled for the effect of substance use and the level of offending in one time period on the likelihood of repeating that behavior in a subsequent time period.

As expected, substance use and offending in this model are significantly related to each other in the same time period and across time periods. In other words, individuals involved in substance use in one time period are more likely to be involved in offending during that same period and in the next time period. However, these preliminary analyses demonstrated that substance use predicts offending in the next time period more consistently than offending predicts substance use.

It is important to note two cautionary points about these findings. First, although SEM permits an assessment of the relationship between outcomes, the findings do not demonstrate causality and should not be interpreted as such. Second, these observed relationships are only preliminary because the study did not control for other case characteristics or life events that might alter the observed patterns. D’Amico and colleagues (2008) have taken a

similar approach, but they introduced controls for other characteristics. When the controls were introduced, they found a reciprocal relationship between the two behaviors over time. As the Pathways study continues, investigators will need to add controls to determine whether the same effects are observed.

## Offenders With Identified Substance Use Problems Are Receiving Treatment

Participants in the Pathways study provide information about the types of social services they receive while in institutional care and while in the community during each of the followup periods. In addition, investigators administer a structured clinical assessment instrument (the CIDI) that provides a diagnosis for several disorders, one of which is substance abuse/dependence. With these sources, researchers can ascertain whether the adolescents in the sample who most need treatment for substance use actually receive it. Following are some of the preliminary findings:

- Those with diagnosable substance use problems were four times more likely to receive treatment for drug and alcohol abuse than those with no substance use problems (44 percent versus 11 percent). This statistic suggests an appropriate targeting of services, even though many juvenile offenders with substance use disorders did not receive treatment.
- The residential setting matters (see Mulvey, Schubert, and Chung, 2007):
  - Individuals with diagnosable substance use problems in adult jail and juvenile detention facilities were 2.7 times and 5.4 times as likely, respectively, to receive treatment for drug and alcohol abuse than youth without a diagnosable substance use problem.
  - Regardless of whether the youth had a substance use problem, about 56 percent reported receiving treatment for drug and alcohol abuse in contracted residential settings, and 64 percent received the service in contracted residential mental health settings.

Thus, in these settings, it appears that youth receive a “package” of treatment services even when there is not necessarily a clearly demonstrated need.

- After building in statistical controls for a set of background variables, analyses showed that, in the state-run juvenile correctional facilities included in this study, individuals with diagnosable substance use problems were also more likely to receive treatment for substance use issues than those without such problems.
- The vast majority who received treatment received it while in a facility, and very few youth in the sample (less than 10 percent) received treatment for substance use problems in the community. Despite widespread recognition of the importance of community-based treatment for substance use, it is clear that these adolescents, who appear to be in considerable need of such treatment, receive little of it.

Pathways investigators have also considered the effect of drug and alcohol treatment on later substance use in this group of serious offenders. Chassin and colleagues (2009) examined reductions in alcohol consumption, marijuana use, cigarette smoking, and nondrug offending in relation to whether adolescents received treatment, whether the treatment occurred over a sustained time period (at least 90 days), and whether the treatment included family participation. Sustained treatment and family participation are considered two elements of “best practices” for adolescent drug treatment (Bukstein and the Work Group on Quality Issues, 2005; National Institute on Drug Abuse, 2006). Chassin and her colleagues found evidence that, in general, drug treatment produced reductions in substance use that could not be explained by other factors (e.g., past use patterns, being confined, age-related reductions). In addition, reductions in nondrug offending were found, but only when treatment incorporated family members.

These findings are important because most studies examine a particular research therapy that is implemented with high levels of fidelity in a carefully controlled manner. These analyses, however, examine the effect of the

*“Once individuals form a commitment to work and family, they have something to lose and therefore something to guard. Many contend that positive change then occurs as an internal psychological realignment of self-conceptions takes hold.”*

usual treatments provided to juvenile offenders and have found that they do have an impact. In short, the general approach taken in the system appears to have an impact in reducing substance use and offending, if it is done for a sustained period and with family involvement. Substance use treatment, if done with recognized quality standards, can be a valuable component of the types of interventions offered in the juvenile justice system.

Unraveling to what extent reductions in substance use translate to sustained reductions in offending is a question that still needs to be addressed adequately. Reducing substance use is clearly not a panacea for reducing criminal offending; other interventions for risk factors uniquely related to offending are obviously still essential. It is important, however, to note the importance of family involvement to any of these efforts, wherever they are focused. It seems apparent that the dynamics of an adolescent's family play a central role as a potential risk factor and are key to unlocking the mystery of how these two behaviors develop and continue for serious offenders.

In addition, Pathways investigators found that treatment lasting for at least 90 days was successful in reducing marijuana use, whereas reductions in cigarette smoking and nondrug offending were found only when treatment incorporated family members. These findings highlight the need for justice programs to incorporate best practices to realize optimal outcomes for this group of offenders.

## Summary

The evidence from the Pathways to Desistance study provides a rich opportunity to examine the relations between substance use and criminal offending in a sample of serious adolescent offenders. The study's data make it clear that, for serious offenders, substance use and criminal offending are strongly linked. Analyses so far have also shown that substance use is a substantial problem in this group of offenders, few offenders are receiving treatment in the community, and treatment for substance use holds some promise for reducing offending if the approaches reflect best standards of practice.

Further work will unravel some of the mechanisms connecting these two behaviors, and this information will have implications for understanding and intervening in both behaviors. The linkage between substance use and offending may reflect both reciprocity between the two behaviors and common causes; they may fuel each other, and both may be more likely given a common risk profile.

What is clear is that both behaviors decline as individuals, even serious adolescent offenders, enter young adulthood, and unlocking the factors that promote these declines could have substantial implications for improving outcomes for serious offenders. Additional studies are necessary to understand desistance from substance use and criminal offending (either in combination or individually) as well as variability across ethnic groups and genders. It is clear that there is a substantial unmet need for services among serious adolescent offenders, and targeting and improving substance use services for this group will help move them toward a successful transition to adulthood.

## Endnotes

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2. As part of the baseline interview, researchers administered the Comprehensive International Diagnostic Interview (CIDI) (World Health Organization, 1990) to obtain a diagnosis of substance abuse or dependence.

3. The Hispanic subsample was examined mainly because researchers had a large enough group of these adolescents, adequate measures of acculturation and enculturation, and previous work on which to build.

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