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Criminal Involvement Among Young Male Ecstasy Users

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Ecstasy (MDMA) use increased rapidly in the U.S. between about 1995 and 2001. Most research on the drug focused on its psychopharmacological and public health contexts. Previous research on drugs-crime linkages suggests that there may have been a concomitant rise in ecstasy-related crimes. We explore this dimension here using data from 7794 arrested men, age 16 to 25, in the 2001 Arrestee Drug Abuse Monitoring (ADAM) sample and 9764 male respondents of similar age in the 2001 National Household Survey on Drug Abuse (NHSDA). Our results using a variety of bivariate and regression methods indicate that ecstasy use is less prevalent among young male arrestees than young men in general and that ecstasy use among arrestees is positively associated with various measures of drug market participation but negatively related to violent and property offenses. We recommend further investigation of ecstasy use in drug-oriented data sets and longitudinal studies to evaluate the link between ecstasy use and overall drug marketing.

Keywords   ecstasy; MDMA; arrestee; ADAM; NHSDA; illicit drug markets

Introduction

Among the more striking features of U.S. substance misuse epidemiology at the turn of the 21st century was the rapid increase in the use of the illicit stimulant known most commonly as ecstasy or MDMA (3–4 methylenedioxymethamphetamine). First synthesized in 1914 by Merck Pharmaceuticals, MDMA remained an obscure compound until recreational use of it began in the 1960s. In the early 1980s, ecstasy became increasingly popular among college students, gays, and dance enthusiasts, subsequently drawing the attention of legislators and law enforcement (Beck and Rosenbaum, 1994). Ecstasy was classified as a Schedule 1 drug in 1985 and remains so (McDowell and Kleber, 1994).

In the mid 1990s, ecstasy use again began to increase rapidly (Office of Applied Studies, 2000) and continued to do so through 2001, although there are indications that these levels have since declined among adolescents (Johnston, O'Malley, and Bachman, 2003). Ecstasy has drawn a moderate amount of scientific attention, with most of the available research focused on the psychopharmacology of the drug. Few studies have directly examined possible links between ecstasy and crime or systematically compared the prevalence of ecstasy in offender and general populations (Yacoubian, 2002).

There are some indications concerning criminal behavior among ecstasy users. Relative to the early literature that found that ecstasy users were largely students, gays, new age

hippies, or music/dance enthusiasts (Beck and Rosenbaum, 1994), ecstasy has recently been reported among a wider variety of users and has been implicated in the commission of a variety of crimes, including violent crimes (National Drug Intelligence Center, 2003). While the level of ecstasy-associated crime appears fairly low overall, instances of drug-assisted rape and vandalism have been reported (Office of National Drug Control Policy, 2002). Another crime associated with ecstasy use is driving under the influence of drugs or alcohol (Logan and Couper, 2001; Lenton and Davidson, 1999), and studies in some cities have linked ecstasy use with prostitution and firearms violations (Office of National Drug Control Policy, 2001; McNulty and Carr, 2002).

Scholarly literature has suggested that some types of drugs are contributing factors in criminal behavior. For example, crack cocaine and heroin have been shown to be contributing factors in a variety of criminal behaviors, including robbery and burglary (Baumer et al., 1998). If ecstasy misuse is a contributing factor in criminal behavior, understanding the manner through which it impacts crime could yield important information for crime prevention and other concerns.

There are a variety of ways in which ecstasy could contribute to crime. Discussions of the linkage between substance misuse and crime have reflected the framework originally proposed by Goldstein (1985) and elaborated by Brownstein and Goldstein (1993), who suggested three fundamental pathways through which drugs might cause or influence criminal behavior. Although these authors' focus was specifically on violent crime, the framework is readily generalizable to the way substance misuse could contribute to other criminal activity. The *psychopharmacological* pathway postulates that acute or chronic drug or alcohol intoxication may directly influence an individual to commit crimes. Disinhibition, cognitive perceptual disorders, neurochemical changes, or impaired judgment may lead the afflicted individual to commit a crime he or she otherwise would not (Goldstein, 1985; Brownstein and Goldstein, 1993). This type of association between drugs and crime has been found to depend heavily on the drug in question. There is consistent support for a strong association between alcohol intoxication and violence (White and Gorman, 2000), and some research suggests that chronic use of amphetamines increases the risk of violent behavior through cognitive distortions and drastic mood swings (Pennell et al., 1999; Smith, Galloway, and Seymour, 1997). Chronic ecstasy intoxication has been shown to reduce inhibitions (McDowell and Kleber, 1994), possibly resulting in rape, sexual assault, or other conduct offenses.

A second possible pathway is the *systemic*. Systemic drug-related crime results from negative interactions anchored in illegal drug markets. Systemic crimes resulting from participation in drug markets include fights over territory and organization as well as transaction breakdowns leading to assaults or robbery of dealers and buyers (White and Gorman, 2000; Menard and Mihalic, 1995). Goldstein (1997) notes that the systemic pathway may be locally cyclical. When a drug increases in popularity, there may be little systemic violence as dealers have no difficulty finding or keeping enough customers to exhaust their supply of the drug. After the number of new users levels off or declines, violence may begin to emerge as competition for market share increases. Violence then eventually declines when community norms reject the systemic violence associated with the illicit market, or demand for the drug decreases to the point that a lack of profitability takes sellers out the market.

Goldstein's systemic pathway was viewed as having good explanatory power when applied to the crack cocaine epidemic of the 1980s (Blumstein, 1995). Increasing arrests for MDMA possession and trafficking, as well as law enforcement reports of occasional violence, suggest that the systemic pathway may apply to ecstasy (United States Sentencing Commission, 2001; National Institute of Justice, 2003). In the systemic model, ecstasy use is

understood to be related to criminal outcomes through drug market participation that does not necessarily involve the consumer purchase of ecstasy. A more general phenomenon than elevated risk of violent behavior, the increased use and misuse of a new or increasingly popular illicit drug may lead users to more deep-seated engagement in the illicit drug market, beyond simply purchasing the drug of choice for consumption. Moving from peripheral involvement in the market to central roles such as dealing as an occupation comprises a significant criminogenic pathway.

A final pathway, *economic* pressure to commit acquisitive crimes to meet the high cost of frequently repeated use of the drug, seems largely irrelevant to ecstasy use (in contrast to heroin or cocaine) due to the low observed incidence of chronic dependence on ecstasy among its users. Nevertheless, long-term ecstasy use may produce craving and possible subsequent thefts or other property crimes.

In summary, based on general principles and some reports in the literature, we propose to test positive relationships between ecstasy use and criminal behavior, with three specific hypotheses:

1. Ecstasy use is more prevalent in the arrestee population than the national noninstitutionalized population.
2. Among arrestees, ecstasy use is positively related to index offense charges and to a prior history of arrest and incarceration.
3. Among arrestees, ecstasy use is positively related to the extent of participation in drug markets.

Methods

Data Sources

This study draws on two separate data sources. The first and primary dataset used is the 2001 Arrestee Drug Abuse Monitoring (ADAM) program (National Institute of Justice (NIJ), 2003). ADAM is designed to monitor substance use, drug market participation, and related behavior of arrestees in a purposive sample of 35 widely dispersed, mostly large to medium-sized metropolitan counties in the United States. Although not drawn as a random probability sample of metropolitan areas, the ADAM sites as a group approximate a systematic proportional-to-size sample of large and medium-sized urban areas in the United States; such areas comprise 80% of the U.S. population. Within sites, ADAM uses stratified random sampling methods to collect interviews and urine specimens from male arrestees within 48 hours of arrest in booking facilities in each metropolitan area. ADAM data collection during 2001 took place up to four times annually in each area (once per calendar quarter) on a staggered schedule, with collection periods generally lasting 1–2 consecutive weeks in each facility. Where there was more than one booking facility in the area, ADAM drew on multiple facilities designed to capture a systematic arrestee sample (National Institute of Justice, 2003; more generally, see http://www.ojp.usdoj.gov/nij/adam/welcome.html). Female arrestees were also recruited to ADAM by quota sampling in a large fraction of these facilities, as well as some women-only facilities. Due to the differences between how men and women were sampled, female arrestees are not included in this analysis.

ADAM interviews are designed to elicit information about arrestee demographic status, drug use, drug or alcohol dependency, substance misuse and mental health treatment, arrest history and current arrest circumstances, and drug market participation. ADAM interviewers undergo thorough initial and enhancement training designed to assure integrity in sampling

procedures and interview administration as well as to maximize arrestee participation. The interviews are administered under terms of strict confidentiality and anonymity pursuant to Federal regulations protecting human subjects of research, employing informed consent procedures and removing any potentially identifying information from the data files, as approved by multiple, duly authorized institutional review boards. ADAM data cannot be linked to individual persons or used in adjudication. In most booking facilities, more than 85% of selected arrestees consent to be interviewed. While the ADAM data contain a wealth of information on drug markets and substance misuse, the data are subject to some important limitations. For example, the ADAM is not longitudinal, lacks the breadth of some surveys designed to monitor the U.S. substance misuse problem, and is representative only of arrestees in ADAM urban areas, not the entire United States criminal justice system. Despite these limitations, the ADAM is purposely designed to be used in examining the impact of substance misuse on criminal behavior and therefore provides a unique platform for examining ecstasy and criminal behavior.

The ADAM data used here are filtered by respondent age and sex. More than 90% of the ecstasy users in the 2001 ADAM sample are between ages 16 and 25 years, but only 35% of arrestees are in this age group, so we limit the analysis to this age group. Weights were not calculated as a part of ADAM female data processing procedures. The authors accordingly removed all females from the ADAM sample so that weighted estimates may be drawn. After these filters are applied, the analytic sample included 7794 cases from 33 ADAM sites.

For the purpose of making general population comparisons, we employ the 2001 National Household Survey on Drug Abuse (Office of Applied Studies (OAS), 2002). The NHSDA is a stratified random sample survey representing the noninstitutionalized civilian residential population of the United States, carried out on an annual basis under the auspices of the U.S. Department of Health and Human Services. The NHSDA utilizes stratified sample design to estimate the prevalence and correlates of substance use. It is an anonymous, confidential, voluntary survey incorporating informed consent procedures approved by institutional review boards. Our analytic sample is drawn from the 2001 NHSDA file (downloaded December 17th, 2002 from the public use website at http://www.icpsr.umich.edu:8080/SAMHDA-STUDY/03580.xml). We filter the NHSDA sample in exactly the same manner as the ADAM file, including only male subjects ages 16 to 25 years. The resulting sample has 9764 cases.

We further investigated the possibility of using a subset of the NHSDA file comprised only of young men who reported one or more arrests during the year prior to the interview, in other words, an exact parallel to the ADAM sample but sampled from households rather than booking facilities. However, we found that this NHSDA arrestee subgroup differed considerably in its demographics, particularly ethnicity, not only from the ADAM sample but from the other principal data series on arrestees, the FBI Uniform Crime Reports—confirming that the NHSDA sample of criminal justice populations as such is of dubious representative quality. We therefore report here the overall NHSDA comparison group only, of which the criminal justice population is a very small fraction.

Statistical Approach

The analytic plan for this analysis takes a three-step approach. The first object of the paper is to compare the prevalence of ecstasy in the ADAM with that of the overall population (NHSDA). To do this we compare self-reported substance use and demographic profiles

between the ADAM and the NHSDA. For substance misuse, the past-year prevalence of ecstasy, marijuana, methamphetamine, and cocaine, as well as the past-month prevalence of binge alcohol use in the arrestee and household samples are contrasted. We additionally compare demographic measures of arrestees with those in the household population.

Next we evaluate whether ecstasy use is linked with FBI index offenses or a more extensive arrest history among the ADAM sample. Here we compare demographic distributions of ecstasy users and nonusers, testing significance of differences with chi-square. We then compare indices of criminal charges and arrest histories of ecstasy users and nonusers, using chi-square and difference of means tests as appropriate. Finally, we use logistic and linear regression to evaluate whether ecstasy use is robustly related to criminal charges and arrest history, controlling for demographic status, other drug use, and substance misuse risk.

The final objective of analysis is to address whether ecstasy users are more likely to participate in drug markets. Again using the ADAM data, but limited the models to only arrestees who reported drug "buys," we first generate bivariate comparisons of market participation indicators between ecstasy and other drug users. Where appropriate, these bivariate comparisons are tested for significance using chi-square and difference of means tests. We then employ linear regression to examine whether ecstasy use is related to drug market participation controlling for demographic status, other drug use, and substance misuse risk.

As both the NHSDA (Office of Applied Studies, 2002) and some ADAM sites (National Institute of Justice, 2003) use a complex stratified sampling design, we perform all calculations with STATA version 7.0. STATA is a statistical analysis package with specialized estimation algorithms developed to take into account the impact of design effects on variance estimates when using survey data. All figures in this analysis have been fit with the appropriate STATA survey (SVY) procedure to correct for the impact of sampling stratification on variance estimates. All figures have been weighted to account both nonresponse and differential sampling probabilities.

Dependent Variables

Arrest Offense. In order to estimate ecstasy's influence on the commission of different types of crimes, we coded the official arrest charges filed against ADAM arrestees, recorded from booking records prior to the interview. Up to three offense codes ("top charges") are recorded. We used ADAM booking offenses to determine whether the arrestee was charged with an FBI index offense (assault, robbery, burglary, theft, or car theft), a drug offense (possession, trafficking, or manufacture), driving while intoxicated or under the influence of alcohol or drugs (DWI/DUI), or some other offense.

For each offense type, we created a binary measure capturing whether the arrestee had been charged with that offense. If so, the measure was coded 1, otherwise 0. Positive values on these variables are not mutually exclusive—an arrestee may have been charged with more than one type of offense.

Prior Arrests and Incarcerations—Lifetime. Arrest and incarceration history is determined using two questions. Arrestees were asked "Before this arrest, have you ever been arrested—that is, charged on a criminal offense or picked up on a warrant and booked at a holding facility like this?" and "Were you ever held in jail for at least 24 hours, or did you serve time in a jail, prison, juvenile detention facility or boot camp?" If the arrestee had ever been arrested, he was coded 1; else 0. About 73% of arrestees indicated at least one prior arrest. Lifetime incarceration history was coded in an identical fashion. Arrestees who were ever

held at least 24 hours were coded 1, otherwise 0. Approximately 69.2% of the analytic sample reported at least one lifetime 24-hour incarceration.

Prior Arrests and Incarcerations—Past Year. Similar to lifetime arrests and incarcerations, respondents were asked whether they had been arrested or incarcerated before during the 12 months preceding the interview, and, if so, the number of arrests and number of days incarcerated in each month, as marked out on a linear calendar anchored by holidays and personal events such as birthdays. The questions were as follows: "Please tell me your best estimate of the number of times you were arrested that month . . . Please tell me your best estimate of the number of days you were in jail, prison, juvenile detention facility or boot camp that month." Past-year arrest and incarceration are treated here as continuous variables. Total number of past-year arrests (excluding the current one) ranged from 0 (48% of cases) to 120, with a mean of 0.93 and median of 1; similarly, the prior number of days spent in jail during the past year ranged from 0 (more than 65% of all cases) to 360, with a mean of 18 days.

Drug Market Participation. We use four indicators of drug market involvement based partly on work by Taylor and Brownstein (2003). In operationalizing measurement of drug markets for the ADAM, Taylor and Brownstein note that markets may be defined partly by patterns of interactions and structure. We operationalize interactions patterns with two items capturing *drug buying behavior*. Similarly, we measure structural involvement in drug markets with two additional items capturing *social involvement* in drug markets.

Drug Buying Behavior. We measure the degree of market participation using measures of *the percent of the last cash purchase of drugs for others* and *the average amount paid for the last transaction*. The ADAM questionnaire provides detailed information about cash and non-cash acquisitions of five drugs: marijuana, crack cocaine, powder cocaine, heroin, and methamphetamine. The ADAM questionnaire does not ask for details about obtaining any other drugs, including ecstasy. For each of the five drugs, ADAM respondents are asked to provide information about the *last time* in the past 30 days, if any, that they obtained the drug using "cash or something else." Each ADAM arrestee may thus report on the details of as many as 10 (or as few as zero) cash (including mixed cash-plus-noncash) or noncash-only transactions. A variety of information about price, acquisition circumstances, and purchase frequency is included in these questions.

The first transaction variable is the *percent of the last transaction bought for others*. For cash "buys" ADAM respondents were asked "How much of the [drug] you bought was for you to use yourself?" Averaged across all five drugs, the percent of drugs bought for others is simply calculated as 100 minus the integer percent of drugs bought for oneself. This measure ranges from 0 to 100 and has a mean of 26%. Only arrestees who reported at least one cash or noncash transaction in the past month are included in this measure.

The second transaction variable is the *average amount paid for the last transaction*. Measured in U.S. dollars, the average amount paid is simply the amount paid for all cash transactions reported in the past month averaged across the number of cash transactions reported. This variable ranges from $0.50 to $470. The mean dollar amount paid for drugs per reported cash transaction was $46.10.

Social Involvement. We use two variables to capture the degree to which the arrestee has established relationships within local drug markets. The rationale behind the social involvement approach is that persons with interpersonal associations facilitating the use or purchase

of illegal drugs may be deemed more likely to participate in drug markets. That is to say, the presence of such relationships indicates the arrestee is actively engaged in the social structure of drug markets. We operationalize the presence of such interpersonal associations using two variables: *the percentage of last transactions obtained directly* and *the percentage of last transactions obtained from a regular source through a friend or coworker*.

The first social involvement variable is the *percentage of last transactions obtained directly*. The ADAM questionnaire asks "The last time you bought [drug] did you: buy it yourself directly or did you give someone cash to buy it for you?" We interpret this measure as assessing whether the person has direct personal contact with a drug dealer, which is more likely if the buyer has a strong relationship to the drug market. With unknown buyers, dealers will often attempt to mitigate the risk involved in the transaction by using a go-between rather than engaging in a direct sale (Dunlop and Johnson, 1999). Arrestees who bought drugs directly are coded 1 on this measure, otherwise 0. The percent of last transactions obtained directly is accordingly the number of valid direct "buys" averaged across all drugs bought with cash. This measure ranges from 0 to 100. About 83% of cash buys were purchased directly.

The second social involvement variable is *the percentage of last transactions obtained from a regular source*. Respondents who reported a cash transaction were asked "Is this person you bought it from: your regular source, an occasional source or a new source for [drug]." Each buy from a regular source were coded 1, otherwise 0. This item was then averaged across all drugs purchased and ranged from 0 to 100. Arrestees reported that a bit less than half (47%) of the time their drugs were purchased from regular sources.

Independent Variables

Ecstasy Use. We measured self-reported ecstasy use in the year preceding the interview. Ecstasy use is determined in the ADAM first by asking whether the respondent ever used any drug other than alcohol or the five previously queried substances, namely marijuana, crack cocaine, powder cocaine, heroin, and methamphetamine; and if so, which drug he used most often. If the answer is affirmative and ecstasy (or MDMA) was named, the respondent was asked whether it had been used at all in the past 12 months. An additional item in the questionnaire asks specifically whether the arrestee had used any "ecstasy, MDMA" in the past 3 days. Arrestees using ecstasy at all in the past 3 days (based on the direct question) or the past year (based on the defined sequence of questions) were coded 1; all other arrestees were coded 0. Of the total 435 past-year ecstasy users in the analytic sample, approximately 37.5% (161) reported using in the past 3 days.

Although virtually every ecstasy user in ADAM used one of the five named drugs as well as ecstasy, this measure specifically captures the effect of using ecstasy only. A measure of other drug use is detailed below and it is included in all multivariate models to control for the potential confounding effects of using drugs other than ecstasy. Of the 7579 respondents in the ADAM analytic sample, about 5.7% reported using ecstasy in the past year.

Demographic Measures. Our analyses control for various elements of the arrestee's demographic status including: *age, ethnicity, education, employment*, and *marital status*. All of these have been shown to correlate with criminal participation and drug taking among youth (Krohn, Lizotte, and Perez, 1997). We include demographic variables in our multivariate models to control for possible confounding effects.

Drug and Alcohol Misuse and Dependence. The need to control for drug and alcohol misuse and dependence derives from two considerations. A body of literature suggests that ecstasy use may cause dependence among some users (Jansen, 1999; Cottler et al., 2001; Von Sydow et al., 2002). Also, misuse or dependence may be proxies for other factors that affect both drug use and crime, such as sensation-seeking personality characteristics (White and Gorman, 2000).

Drug and alcohol dependence are operationalized in the ADAM using a modified version of the UNCOPE, a brief substance misuse/dependence screening instrument designed for use with arrestees and based partly on DSM-IV criteria. Previous research adapting the UNCOPE for the ADAM found that UNCOPE items demonstrated good discrimination for drug or alcohol misuse and dependence (Hoffman et al., 2003). In this analysis, separate measures are provided for alcohol and illicit drugs. Both items are coded 0 through 2 based on UNCOPE scores. A value of 0 indicates no risk, 1 indicates risk of misuse, and 2 indicates risk of dependence.

Other Drug Use. As noted previously, ecstasy users have been clearly demonstrated to use a variety of drugs in addition to ecstasy (Kalant, 2001; Office of Applied Studies, 2000, 2002; Fritz, 1999). In multivariate models we control for past-year use of a number of common drugs: marijuana, crack cocaine, powder cocaine, opiates, and methamphetamine. Degree of other drug use is a continuous measure ranging from 0 to 5. The average arrestee in the ADAM analytic sample reported using 1.08 drugs in addition to ecstasy, (s.d. = 1.05). Among ecstasy using arrestees, the most common additional drug taken was marijuana, (91%), followed by powder cocaine (37%) and methamphetamine (30%).

Results

Arrestees vs. Household Residents

Results from our comparison of ecstasy prevalence between the arrestee and household samples indicate that after filtering for sex and age, self-reported ecstasy use is lower in the arrestee sample than in the household sample—the only substance tested here for which this occurs. The percentage of past-year ecstasy users among young male arrestees is about one-fourth less than among young men in the household survey (see Table 1). Arrestees report about the same likelihood as household residents of getting drunk in the past month (more than five drinks on the same occasion), but they report substantially higher prevalence rates in the past-year of marijuana (66% vs. 31%), methamphetamine (14% vs. 2%), cocaine (17% vs. 7%) and heroin (4% vs. .06%) (see Table 1).

Demographic comparisons between the arrestee and household samples also yield notable differences (see Table 2). Relative to the household population, male arrestees are far more likely to be African-American (35% vs. 13%) or Hispanic (27% vs. 15%) (see Table 2). Arrestees are somewhat older than household youth even within the 16–25-year-old age group, and are slightly less well educated: 43% of arrestees (vs. 48% of householders) are younger than 20 years, but 43% (vs. 48%) have completed at least a high school degree.

Ecstasy Users vs. Non-Ecstasy Users

Table 3 is limited to the arrestee sample and shows ecstasy use status by various demographic measures. Table 3 indicates that there are small but statistically significant differences

Table 1

Drug use in the past year of men ages 16–25 in arrestee and household populations[a]

(Unweighted n)	ADAM (7,794) % (95% C.I.)	NHSDA (9,764) % (95% C.I.)
Ecstasy	5.6 (5.0–6.2)	7.6 (6.9–8.3)
Marijuana	66.4 (65.2–67.6)	31.3 (30.1–32.5)
Methamphetamine	14.2 (13.3–15.1)	1.7 (1.4–2.1)
Cocaine	17.1 (16.2–18.1)	6.9 (6.2–7.6)
Alcohol[b]	46.9 (45.6–48.2)	45.9 (44.6–47.1)
Heroin	4.1 (3.6–4.6)	.06 (.04–.08)

[a]Percent estimates calculated using the STATA SYVMEAN procedure. Figures are weighted to reflect parent populations and account for the effects of complex sample design.
[b]Drank more than five drinks on the same occasion in the past month.

between ecstasy users and other young male arrestees in a variety of respects. The ecstasy users are more likely to be white (33% vs. 27%), better educated (70% with a HS diploma vs. 60%), and somewhat younger (48% under 20 years vs. 43%) than nonusers. All of these differences support the use of our demographic covariates as controls in the multivariate analyses below.

Ecstasy, Charge Offense, and Incarceration

To evaluate our second research hypothesis, we examine bivariate and then multivariate associations between ecstasy use, arrest offense, and incarceration history. Table 4 shows

Table 2

Selected demographic characteristics of males ages 16–25 in arrestee and household populations[a]

(Unweighted n)	ADAM (7,794) % (95% C.I.)	NHSDA (9,764) % (95% C.I.)
Race		
White	27.0 (25.9–28.1)	66.3 (65.2–67.5)
Black	34.6 (33.3–35.8)	12.6 (11.8–13.4)
Hispanic	27.2 (26.1–28.3)	15.4 (14.5–16.3)
Other	11.0 (10.2–11.8)	5.6 (5.0–6.2)
HS Grad or higher	60.4 (59.1–61.6)	69.8 (68.6–70.9)
Under age 20	43.2 (41.9–44.4)	48.4 (47.2–49.7)
Marital status		
Single	85.6 (84.7–86.5)	88.1 (87.2–88.8)
Divorced	2.8 (2.4–3.4)	0.9 (.7–.12)
Married	10.8 (10.0–11.6)	11.0 (10.2–11.8)

[a]Percent and confidence interval estimates calculated using the STATA SVYMEAN procedure. Figures are weighted to both reflect parent populations and account for effects of complex sample design.

Table 3

Selected demographic composition of ecstasy users and non-ecstasy users among male arrestees ages 16–25[a]

	Ecstasy use		
(Unweighted n)	Used ecstasy (435) %	Did not use ecstasy (7,579) %	p
Race			
White	33.4	26.7	.004
African-American, Black	30.0	34.9	
Hispanic	22.1	27.6	
Other	14.5	10.8	
HS Grad or higher	69.8	59.8	.000
Under age 20	47.5	42.9	.109
Marital status			
Single	89.0	86.0	.374
Divorced	2.8	2.9	
Married	8.2	10.0	

[a]Percentages are weighted to reflect population totals. Numbers estimated using STATA SVYTAB procedure and are adjusted to account for the effects of complex sample design. Figures are weighted to reflect differing sampling probabilities and response rates.

Table 4

Charge type and arrest and jail histories among male arrestees ages 16–25[a]

	Drug use type		
(Unweighted n)	Used ecstasy (435) %	Did not use ecstasy (7,579) %	p
Assault	**9.3**	**13.2**	.055
Robbery	1.2	1.9	.287
Burglary	**2.1**	**3.5**	.090
Theft	7.4	7.8	.745
Car theft	2.6	2.8	.775
Drug-related offense	**25.5**	**19.2**	.004
DWI	4.9	4.8	.958
Other offense	45.8	45.5	.919
Arrested before	76.6	73.1	.154
Incarcerated before	**74.6**	**68.7**	.024
	Mean	Mean	
Past-year arrests	**1.05**	**0.92**	.089
Past-year days incarcerated	**27.1**	**18.0**	.006

[a]Figures generated using the STATA SVYTAB and SVYMEAN procedures. Numbers are weighted to reflect differing sampling probabilities and response rates. Figures have been adjusted to account for sample design.

Table 5

Multivariate findings—past-year ecstasy use predicting charge type and arrest and jail histories of male arrestees ages 16–25[a]

Odds ratio								Beta coefficient			
Assault	Robbery	Burglary	Theft	Car theft	Drug-related offense	DWI	Other	Ever arrested	Ever jailed	N of past year arrests	N of past year days in jail
0.682[b]	0.592	**0.489[c]**	0.839	0.833	**1.29[c]**	1.32	1.13	0.964	0.977	.080	−0.010

[a]Models are weighted to reflect differing sampling probabilities and response rates. Models also account for effects of complex sampling design. Control variables include demographics, polydrug use, and risk of alcohol or drug dependence. Odds ratios generated using the STATA SVYLOGIT procedure. Beta coefficients calculated using the STATA SVYREG procedure.
[b]$p < 0.10$
[c]$p < 0.05$.

a simple distribution of arrest offense and incarceration history by ecstasy use. Table 4 indicates that ecstasy users are less likely to be charged with assault (9% vs. 13%) or burglary (2% vs. 4%) but are more likely to be charged with a drug-related offense (26% vs. 19%). Previous lifetime arrests do not differ significantly; however, users appear to have higher rates of lifetime incarceration (75% vs. 69%). Past-year arrests and days incarcerated are higher among users also. Ecstasy users appear to have a slightly greater number of arrests (1.1% vs 0.9%) and days in custody (27 vs. 18) than nonusers.

Table 5 shows the impact of ecstasy use on arrest patterns and incarceration history, controlling for demographic status, other drug use, and risk of substance misuse/dependence. The results are similar to the bivariate findings in Table 4. Ecstasy users have significantly lower odds of being charged with assault (OR = 0.682, $p < 0.10$) and burglary (OR = 0.498, $p < 0.05$). Also similar to Table 4, ecstasy takers are more likely to be charged with a drug offense (OR = 1.29, $p < 0.05$). Unlike Table 4, however, after controlling for potential confounds, ecstasy users do NOT have higher rates of arrests or incarcerations, regardless of lifetime or past-year measurement (see Table 5). Judging from the pattern of control variable coefficients (not shown here), this change appears due mainly to adjusting for using illicit drugs other than ecstasy, which strongly predict prior arrest history.

Ecstasy Use and Drug Markets

Table 6 indicates that ecstasy users have elevated drug buying behavior and greater social involvement in drug markets. On average, ecstasy users bought a greater percentage of drugs for distribution (32% vs. 26%, $p < 0.001$) and paid a higher amount per transaction than nonusers. This difference is broadly applicable—it remains after removing the most expensive 5% of transactions, to eliminate the possible biasing effect of high-value outliers ($74 vs. $44, $p < 0.001$); it also holds if the value of the top 5% is capped or the top quartile is removed (not shown in table). In terms of social involvement measures, ecstasy takers bought a greater percentage of their drugs directly from a dealer vs. through an intermediary (90% vs. 83%, $p < 0.000$).

Table 6

Drug market participation indicators (for last transactions) by past-year ecstasy use among male arrestees ages 16–25[a]

	Drug use type		
(Unweighted n)	Used ecstasy (435)	Did not use ecstasy (7,579)	p
Drug buying behavior[b]			
Amount of drugs bought for others	32.1%	25.7%	.001
Mean cost (excluding top 5%)[c]	$74	$44	.000
Mean cost (top 5% cost truncated)[d]	$101	$56	.001
Mean cost (all cases)	$253	$89	.001
Social involvement			
Drugs were bought directly (from dealer)	90.4%	82.9%	.000
Drugs were bought from a regular source	49.9%	47.2%	.444

[a]Figures are weighted to reflect differing sampling probabilities and response rates; standard errors reflect sample design effects. The STATA SVYMEAN procedure was used to generate estimates.
[b]Drug buying behavior refers to obtaining drugs other than ecstasy. Drugs obtained could include; marijuana, powder cocaine, crack cocaine, heroin, or methamphetamine.
[c]Amounts greater than $470 (95th percentile) set to missing.
[d]Amounts greater than $470 set to $470.

Controlling for known covariates (Table 7), ecstasy use appears even more strongly related to drug markets than in the bivariate results. Controlling for demographics, other drug use, and substance misuse risk, ecstasy takers buy a greater percent for others (beta = 6.46, p < 0.001), and pay more for their last cash transaction (beta = 29.0, p < 0.001). Additionally, ecstasy users remain more likely to obtain their drugs directly than nonusers (beta = 7.2, p < 0.001).

Discussion

We predicted that ecstasy use would be higher among young male arrestees than in a comparable household population. This hypothesis is not supported. On the contrary, the finding here is that ecstasy is reported only three-fourths as frequently by young male arrestees as by young male household residents.

Table 7

Multivariate findings—past-year ecstasy use predicting drug market participation indicators among male arrestees ages 16–25[a]

% Bought for others	Mean $$ for last drug buy	% Buying direct (from dealer)	% Obtained from regular source
	Beta coefficient		
6.46[b]	29.0[b]	7.18[b]	0.009 (NS)

[a]Estimates are weighted to reflect differing sampling probabilities and response rates and account for the effects of complex sample design on standard errors. Models control for demographics, polydrug use, and risk of alcohol or drug dependence. Parameter estimates calculated using the STATA SVYREG procedure.
[b]p < 0.001.

We additionally hypothesized that ecstasy use would be positively related to FBI index offenses and that ecstasy users would have a more extensive arrest history. Our findings here are largely negative, and shed some doubt on the particular relevance of the systemic pathway, at least in the original formulation. After controlling for covariates, we found that ecstasy use by young arrested men is largely not related to FBI index offenses and to prior lifetime arrests and incarcerations. The only charges with which ecstasy appears to have positive associations are drug offenses. Ecstasy use appears to be positively associated only with other markers of illicit drug use as such, and negatively associated with other crimes such as assault or burglary.

The final hypothesis, that ecstasy use is positively associated with illicit drug market participation (involving measures that do not refer to obtaining ecstasy as such), is partially supported. In multivariate models, ecstasy taking is positively related to three of four measures of market participation—the proportion of buying done for others, the dollar amount spent on the last buy, and the percent of drugs purchased directly from a dealer—all the measures previously associated with market participation, but only one of those characterized as measuring social involvement. The most notable relationship is the strength of the dollar measure. We cannot rule out that ecstasy users simply have more money to spend on drugs than nonusers, since ADAM has no direct measure of income or wealth. But our controls for education level, employment status, and ethnicity serve as reasonable proxies for income, and the relationship appears strengthened rather than weakened when these controls are implemented. This set of results suggests that arrested ecstasy users may be differentially involved in drug markets more for economic reasons than social ones. It can be speculated, but cannot be determined further based on these data, that this may be a selection phenomenon—that because ecstasy users are less inclined toward violent and property index crimes than drug users who do not use ecstasy, their greatest likelihood of arrest is attached to drug-buying activities, particularly buying larger quantities for redistribution—that is, dealing. We note again that all of these measures concern marketing of drugs other than ecstasy.

Despite hints of escalating violent and sexual offenses in law enforcement reports, the finding that ecstasy is negatively related to FBI index offenses and overall arrest history appears to confirm the ethnographic literature on ecstasy culture, which suggests that an ethos of "peace, love, unity, respect" may to some extent be a continuing feature of the ecstasy experience (Fritz, 1999). The negative relationship may also be due partly to pharmacological effects. Use of ecstasy is known to flood brain synapses with serotonin, while simultaneously inhibiting its reuptake, thus creating feelings of personal well-being, empathy, and openness towards others (Weir, 2000; Saunders and Doblin, 1996; Liester et al., 1992). In short, ecstasy intoxication may directly inhibit violent or property crime. Of course, it may also be that ecstasy intoxication has more appeal to those who in other respects are generally nonviolent, law-abiding citizens. This kind of chicken vs. egg issue can only be sorted out with longitudinal studies.

The finding that users are more likely to be charged with a drug-related offense is consistent with increasing federal and local pressure on the ecstasy epidemic (Nagourney, 2001; Cloud, 2001; Ragavan, 2001) and increasing proportion of federal charges for ecstasy-related trafficking offenses (United States Sentencing Commission, 2001). We do not have sufficient details about charges to determine the extent to which ecstasy rather than trafficking in other drugs accounts for the observed charge patterns.

Limitations

Our measures of drug use are all self reported. Moreover, the ADAM questionnaire does not probe as directly for indications of ecstasy use as it probes for the other drugs discussed here.

The implication of this difference for NHSDA/ADAM comparisons is discussed above; this inconsistency would also tend to make it more difficult to detect true differences between the ecstasy and nonecstasy groups in the ADAM sample, since it may misallocate some of the ecstasy users to the nonuser group. Self reports of illicit or socially stigmatized behavior are generally understood to suffer from a number of drawbacks, including forward telescoping and intentional concealment (Johnson, Gerstein, and Rasinski, 1998). There is clear evidence of the concealment of recent other drug use, particularly cocaine, in ADAM (National Institute of Justice, 2003; Arrestee Drug Abuse Monitoring Drug Use and Related Matters Among Adult Arrestees, 2001; Arrestee Drug Abuse Monitoring. Annualized Site Reports, 2001), by a significant proportion of arrestees. Such arrestees could be underreporting the extent of their other drug use and perhaps their drug market behavior as well.

Additional complications are introduced by the variable quality of street drugs sold as ecstasy. Indeed, many illicit pills sold as "ecstasy" may contain a number of other adulterants, such as methamphetamine or dextromethorphan (Baggot et al., 2000) or may not be 3,4-methylenedioxymethamphetamine at all (Hayner, 2002).

An additional constraint was introduced by the relatively low prevalence of detailed ecstasy data in the ADAM questionnaire. While the ADAM instrument did contain detailed information about the frequency of past-year use of variety of drugs, only 21 past-year ecstasy users provided data about their month-to-month frequency of past-year use, too few cases to support multivariate analysis of frequency levels, vs. a dichotomous indicator.

Although the ADAM sample is large, well-dispersed, and selected randomly within booking facilities, it is not directly representative of U.S. booking facilities and thus not rigorously generalizable to the U.S. population of arrestees, or, of course, to ecstasy users who have not been arrested. Additionally, there may be important geographic differences in illicit market dynamics. While outside the scope of this analysis, it is possible that the linkage between ecstasy use and crime varies across geographic areas. In parts of the country where ecstasy use is high, the linkage between ecstasy and crime may be stronger. The systemic model suggests that areas of greater ecstasy demand may evidence stronger relationships between ecstasy and violent crime.

The finding that ecstasy users purchase drugs in higher mean amounts may be due to economic resources—we cannot rule out the idea that ecstasy users may buy more drugs or pay more for them simply because they can better afford them. The ADAM questionnaire does not directly measure income or wealth, and the proxies of marital status, education, and race are suggestive but imperfect. Also, the ADAM data record up to three charge codes per arrest, but more than three charges may be filed. It is possible, albeit unlikely, that the pattern of omitted charges may differ between ecstasy and nonecstasy users in the opposite directions from the differences observed in recorded charges.

Lastly, the ADAM data do not provide comprehensive event histories. Ecstasy use probably predates the particular crime for which the arrestees is charged, but ADAM does not definitively establish the temporal ordering of these (and related) events. Longitudinal data and suitable analyses are needed to critically evaluate the conceptual pathways outlined here.

Conclusion

In a large sample of young male arrestees, ecstasy use is positively related to drug market participation (involving drugs other than ecstasy) and arrest for drug-related crimes, but negatively related to arrest for violent and property crimes. This finding suggests that the most direct pathway between ecstasy use and crime lies in nonviolent but economically aggressive participation in drug markets. The exact manner in which ecstasy users become

involved in drug markets is not discernable in this analysis, and further research should focus on capturing this dynamic more precisely.

If recent declines in ecstasy use among students (Johnston, O'Malley, and Bachman, 2003) are observed more generally, alarm about ecstasy may fade from public discourse, but this substance will continue to pose policy questions in the United States and elsewhere. The importation and use of ecstasy in the United States has resulted in increasing burdens on the law enforcement, judicial, and correctional systems as the number of trafficking cases has risen (United States Sentencing Commission, 2001). Researchers, practitioners, and policymakers need to better understand the linkages between ecstasy use and crime in order to more effectively address ecstasy's impact on the social costs of crime.

Acknowledgments

RÉSUMÉ

L'usage de l'ecstasy (méthylènedioxyméthamphétamine—MDMA) s'est rapidement accru aux Etats-Unis entre approximativement 1995 et 2001. La plupart des recherches sur la drogue se concentrent sur ses aspects psycho-pharmacologiques et liés à la santé publique. Des recherches préalables sur les rapports drogue criminalité suggèrent qu'il peut exister une montée concomitante dans la criminalité liée à l'ecstasy. Ici, nous explorons cette dimension en utilisant des données prises sur 7 794 hommes arrêtés, âgés de 16 à 25 ans, faisant partie de l'échantillon du "Arrestee Drug Abuse Monitoring" (ADAM) de 2001, et sur 9 764 hommes interrogés d'âge similaire faisant partie du "National Household Survey On Drug Abuse" (NHSDA) de 2001. Nos résultats, qui utilisent une variété de méthodes bivariées et de régression, indiquent que l'usage de l'ecstasy est moins répandu parmi les jeunes hommes arrêtés que parmi les jeunes hommes en général, et que l'usage de l'ecstasy parmi les personnes arrêtées est associé positivement aux diverses mesures de participation au marché de la drogue et liée négativement aux infractions violentes et liées à la propriété. Nous recommandons une investigation plus poussée de l'usage de l'ecstasy dans les séries de données sur la drogue et dans les études longitudinales afin d'évaluer le lien entre l'usage de l'ecstasy et le marketing de la drogue en général.

RESUMEN

El uso del éxtasis (MDMA—metilendioximetanfetamina) aumentó rápidamente en los Estados Unidos, aproximadamente entre 1995 y 2001. La mayor parte de la investigación sobre esta droga se centró en sus contextos psico-farmacológicos y de salud pública. Las investigaciones previas sobre los vínculos con los delitos por drogas sugieren que puede haber habido un incremento concomitante de delitos vinculados al éxtasis. Aquí analizamos este alcance utilizando datos de 7.794 hombres arrestados, de edades comprendidas entre los 16 y 25 años, de la muestra del "Arrestee Drug Abuse Monitoring"

(ADAM)—Control de Detenidos por el Abuso de Drogas—del año 2001, y 9.764 demandados de sexo masculino, de edades similares, de la encuesta "2001 National Household Survey On Drug Abuse" (NHSDA)—Encuesta Nacional de Familias sobre el Abuso de Drogas—. Nuestros resultados, utilizando una diversidad de métodos de regresión y de dos variables, indican que el uso del éxtasis predomina menos entre los hombres jóvenes detenidos que entre los hombres jóvenes en general, y que el uso del éxtasis entre los detenidos ha sido asociado positivamente a grandes medidas de participación en el mercado de drogas y vinculado negativamente a delitos menores de violencia y contra la propiedad privada. Recomendamos una investigación más profunda sobre el uso del éxtasis en grupos de datos vinculados con las drogas, y estudios paralelos para evaluar la relación de esta droga con la comercialización de las drogas en general.

THE AUTHORS

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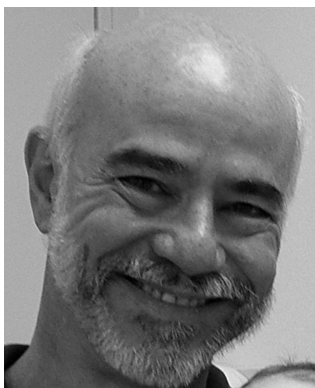
Dean R. Gerstein, is Senior Vice President at the National Opinion Research Center at the University of Chicago, where he founded the Washington Office and leads the Division of Substance Abuse, Mental Health, and Criminal Justice Studies. In recent years, he has been Project Director of the Arrestee Drug Abuse Monitoring program of the National Institute of Justice, the National Archive and Analytic Center for Alcohol, Drug, and Mental Health Data (for the Substance Abuse and Mental Health Services Administration—SAMHSA), the Gambling Impact and Behavior Study (for the National Gambling Impact Study Commission), Reports on Drug Use from the National Household Survey on Drug Abuse (SAMHSA), and he was principal investigator for grants from the National Institutes of Health on vulnerability to drug misuse of high-risk youth, risk of HIV infection among injection drug users, linkages between health services and drug treatment services, and gambling problems among women. During the 1990s, he directed three of the largest multisite substance misuse treatment evaluations ever performed. Prior to joining NORC in 1990 he was a study director at the National Research Council, where he coauthored *Alcohol and Public Policy, Treating Drug Problems, Preventing Drug Abuse*, and many other publications. He has been

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Glossary

Drug Market Participation. Drug market participation is understood to be a general theoretical construct that measures the degree to which an arrestee actively engages in purposive behavior directed toward obtaining or facilitating the buying or selling of illegal drugs. It is understood to be comprised of two elements*, drug buying behavior* and *social involvement*.

Drug Buying Behavior. Defined as making a purchase of any of five common illegal drugs (marijuana, crack or powder cocaine, heroin, or methamphetamine) using either cash, something else in lieu of cash or a combination of the two.

Social Involvement. Having established social relationships for the explicit purpose of facilitating the buying or selling of illegal drugs.

Forward Telescoping. Forward Telescoping is a problem found in survey samples that rely on the accuracy of respondent recall. Forward telescoping occurs when respondents report events that occurred outside of the time period under consideration, thereby inflating the results.

Index Offense Charges. An index offense is a common crime selected by the FBI to gauge fluctuations in the overall volume and rate of crime reported by law enforcement. Index offenses are commonly understood to be the following crimes: murder, nonnegligent manslaughter, forcible rape, robbery, aggravated assault, and the property crimes of burglary, larceny, motor vehicle theft, and arson.

Substance Misuse and Dependence Risk. The ADAM questionnaire included a screener for drug and alcohol dependence based on the UNCOPE. Partially based on DSM IV criteria, the screener included six items that pertained to the respondents' drug or alcohol use; using more than intended, neglecting responsibilities, wanting to cut down, others objecting to use, frequently thinking about using, or using to relieve negative emotions.

Misuse. Pattern of alcohol or drug use resulting in a combination of two from those listed above; except if the two indicators are both thinking about drinking/using drugs and negative emotions. Also, misuse is present if three or more indicators are evident but neither thinking about use nor negative emotions is reported.

Dependence. A pattern of alcohol or drug use resulting in a combination of three or more indicators, including using more than intended, neglecting responsibilities, wanting to cut down, others objecting to use, frequently thinking about using, and using to relieve negative emotions; provided that thinking about using or negative emotions is included in the three or more indicators. If both thinking about using and negative emotions are the only two indicators, this suggests dependence.

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