

Identifying the Prevalence and Correlates of Ecstasy and Other Club Drug (EOCD) Use Among High School Seniors

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ABSTRACT. A plethora of anecdotal evidence has suggested that the use of “club drugs,” such as lysergic acid diethylamide (LSD), Ketamine, Gamma hydroxybutyrate (GHB), and 3,4-methylenedioxy-methamphetamine (MDMA or “ecstasy”), is a serious problem among youth across the United States. Unfortunately, little scientific evidence exists to support this contention. In the current study, we examine the ecstasy and other club drug (EOCD)-using behaviors of 1,561 high school seniors surveyed in 2000 through the Monitoring the Future (MTF) study. Prevalence estimates of EOCD use are generated and associations between EOCD use, demographic characteristics, and alcohol and other drug (AOD) use are explored. Twelve-month self-reports for ecstasy,

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LSD, Ketamine, and GHB were 8%, 6%, 2%, and 1%, respectively. Compared to students who reported no use of EOCD during the 12 months preceding the interview, 12-month EOCD users were significantly more likely to be white, to live in the suburbs, and to have used *all* other drugs of abuse during the 12 months preceding the interview. Logistic regression identified that the strongest predictors of 12-month EOCD use were the use of heroin and other psychedelic drugs during the 12 months preceding the interview. Implications for these findings are discussed. [Article copies available for a fee from The Haworth Document Delivery Service: 1-800-HAWORTH. E-mail address: <docdelivery@haworthpress.com> Website: <<http://www.HaworthPress.com>> © 2003 by The Haworth Press, Inc. All rights reserved.]

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INTRODUCTION

A plethora of anecdotal evidence has suggested that the use of “club drugs,” such as lysergic acid diethylamide (LSD), Ketamine, Gamma hydroxybutyrate (GHB), and 3,4-methylenedioxy-methamphetamine (MDMA or “ecstasy”), is a serious problem among youth across the United States (Leinwand & Fields, 2000; Leinwand, 2001). Leinwand and Fields (2000), for example, described how easily ecstasy pills could be smuggled into raves and how attendees relished the atmosphere of illegal drug acceptance. Unfortunately, little scientific evidence exists to support the contention that the use of ecstasy and other club drugs (EOCD) use is a prodigious problem in the United States. Indeed, few recent empirical studies have addressed the use of EOCD in the United States (Buffum & Moser, 1986; Peroutka, 1987; Meilman et al., 1990; Cuomo & Dymont, 1994; Klitzman et al., 2000; Arria et al., 2002; Yacoubian, 2002b, a; Yacoubian et al., 2002; Yacoubian, in press (a, b, c)).

Peroutka (1987), for example, estimated the prevalence of recreational ecstasy use among a sample of undergraduate students at Stanford University. Of the 369 students interviewed, 39% reported using ecstasy at least once (Peroutka, 1987). Klitzman et al. (2000) explored the relationship between MDMA use and high-risk sexual behaviors among a sample of 169 gay and bisexual men in New York City. A strong association was found between frequent MDMA use and high-risk sexual behavior. The odds ratio for high-risk sexual behavior was 37%

greater among frequent versus non-frequent MDMA users (Klitzman et al., 2000). Yacoubian et al. (2002) surveyed a sample ($N = 209$) of juvenile offenders through Maryland's Offender Population Urinalysis Screening (OPUS) Program in the summer of 2000. None of the offenders reported two-day ecstasy use, and 0% tested positive for MDMA by urinalysis (Yacoubian et al., 2002).

Arria et al. (2002) collected self-report drug use data and oral fluid specimens from a sample of 96 "club rave" attendees in the Baltimore-Washington corridor between August and October 2000. Eighty-nine percent reported lifetime ecstasy use, 49% reported 30-day ecstasy use, and 20% reported using ecstasy within the two days preceding the interview (Arria et al., 2002). Twenty-one percent tested positive for MDMA by oral fluid analysis (Arria et al., 2002). Yacoubian [in press (a)] found low levels of recent ecstasy use among adult arrestees surveyed through the Arrestee Drug Abuse Monitoring (ADAM) Program. Estimates of two-day self-reported ecstasy use ranged from a low of 0% in Des Moines and Laredo to a high of 4% in Charlotte-Metro. Most recently, Yacoubian [in press (c)] explored the ecstasy-using behaviors of 14,096 household members between the ages of 12 and 25 with data collected through the 1998 National Household Survey on Drug Abuse (NHSDA). Compared to non-users, lifetime ecstasy users were significantly more likely to be older, white, and to have used *all* other drugs of abuse within the past 12 months. Logistic regression identified that the two strongest predictors of lifetime ecstasy use were race and self-reported 12-month marijuana use.

While ecstasy is the most popular club drug (Gibb & Johnson, 1990), LSD (Rome, 2001); Ketamine (Dotson et al., 1995), and Gamma hydroxybutyrate (GHB) (O'Connell et al., 2000) have become popular among youthful populations. Dotson et al. (1995: 751), for example, identified that "the social-recreational use of Ketamine has reemerged in the context of a recent subcultural music phenomenon known as 'acid house' music." O'Connell et al. (2000: 2478) noted that GHB has recently become popular as a drug of abuse and that "... persons who attend nightclubs and parties (such as all-night 'raves') use it as a euphoriant."

To date, no studies have identified the prevalence and correlates of EOCD use among a high school population in the United States. Research involving the use of EOCD is critical given the media attention to the proliferation of club drugs and the international evidence suggesting that high school-aged populations are at high risk for EOCD ingestion (Miller & Plant, 1996; Lynskey et al., 1999). In the current study, we explore the EOCD-using behaviors of 1,561 high school seniors sur-

veyed through the 2000 MTF study. We first estimate the prevalence of recent EOCB use among this sample of 12th-grade students, and second, explore the associations between EOCB use, demographic characteristics, alcohol and other drug (AOD) use, and other behaviors/perceptions among members of this population.

METHODS

The MTF study, funded by the National Institute on Drug Abuse (NIDA), began in 1975 as a way to study the drug-using beliefs, attitudes, and behaviors of high school students across the United States. Today, the program surveys approximately 50,000 grade school and high school students annually (Johnston et al., 2000). Annual data collections take place in approximately 130 public and private high schools, thus providing an accurate cross-section of high school seniors throughout the United States (Johnston et al., 2000).

A multi-stage sampling design is utilized (Johnston et al., 2000). Stage 1 is the selection of a specific geographic area. Stage 2 is the selection of the high school(s) within that particular area. The third stage is the selection of individual students within each high school. During the fall of each academic year, an MTF representative makes an initial contact with each sampled school. After securing consent from the high school principal or other administrator, arrangements are made for administering the survey. Two weeks prior to its scheduled administration, MTF staff members visit the teachers and provide a brief overview of the study. Teachers are then asked to announce the study to their students. While parental/guardian permission is not required, youths are informed that their participation is voluntary and confidential. Questionnaires are administered during normal class periods. Most respondents complete the questionnaire within 45 minutes, although additional time is permitted for those who require it.

In addition to basic demographic information, the questionnaire covers areas related to criminal behavior, AOD use, education, health, politics, religion, social change, and social problems (Johnston et al., 2000). The AOD-use questions are fairly specific. Respondents are first to report whether they have *ever* used a panel of illicit drugs. For those drugs respondents report having *ever* tried, they are asked to indicate whether they have used the drug within the past 12 months and the number of times used within the past 30 days. They are also asked about their per-

ceived ability to reduce or stop using drugs and the personal, familial, and occupational consequences of their drug use.

While the students sampled are designed to be representative of high school seniors within the 48 contiguous states, there are three primary ways in which the survey data might fall short of full representativeness (Johnston et al., 2000). First, some schools may decline participation. Second, survey data may not be obtained from all of the students sampled. Both of these limitations could introduce bias to the sample. Third, questions on sensitive issues, such as sexuality and drug use, could lead to distortions and thus reduce validity. Indeed, a large body of research (Mieczkowski et al., 1991; Yacoubian, 2000) has explored the validity of self-reported drug use and determined that, first, respondents tend to generally underreport their involvement in this stigmatizing and highly sensitive behavior, and second, that underreporting increases as the level of drug seriousness increases. These caveats aside, the MTF data provide enlightening information about a variety of behaviors and are generally considered to be a reliable and valid source of drug-using behaviors among youth in the United States.

It is important to note that because a vast array of topic areas falls under the MTF mandate, several “forms” have been developed. These forms are distinct in that each addresses different issues (e.g., club drug use) above and beyond the set of “core” variables. In 2000, six forms were used across the country. For the purposes of the current study, data from Form 3 were utilized. With this preliminary framework, data analysis and findings are presented below.

DATA ANALYSIS AND FINDINGS

Analyses were conducted on 1,561 high school seniors surveyed through MTF in 2000.¹ Data analysis was accomplished in four phases. First, descriptive statistics were generated. Second, estimates of EOCD use were calculated. For the purposes of the current study, EOCD use was defined as the use of ecstasy, GHB, Ketamine, and/or LSD (Rome, 2001).² Third, the sample was divided into EOCD users and non-users based on self-reported use during the 12 months preceding the interview.³ Chi-square statistics were used to detect significant associations between EOCD use, demographic characteristics, AOD use, and other behaviors/perceptions. Fourth, logistic regression was used to identify predictors of 12-month EOCD use.

Descriptive Statistics

As shown in Table 1, a majority of the sample was female (53%), white (82%), and 18 years old or older (51%). Fifty-two percent lived in either a small town or the suburbs.

Self-Reported EOCD Use

Figure 1 displays self-reported use of ecstasy, LSD, Ketamine, and GHB during the 12 months preceding the interview. As shown, 8% of the sample reported using ecstasy during the past 12 months. Six percent reported using LSD within the past 12 months, while 2% used Ketamine and 1% used GHB during the 12 months preceding the interview. In comparison, 36% of the sample reported having used marijuana in the 12 months preceding the interview (data not shown).

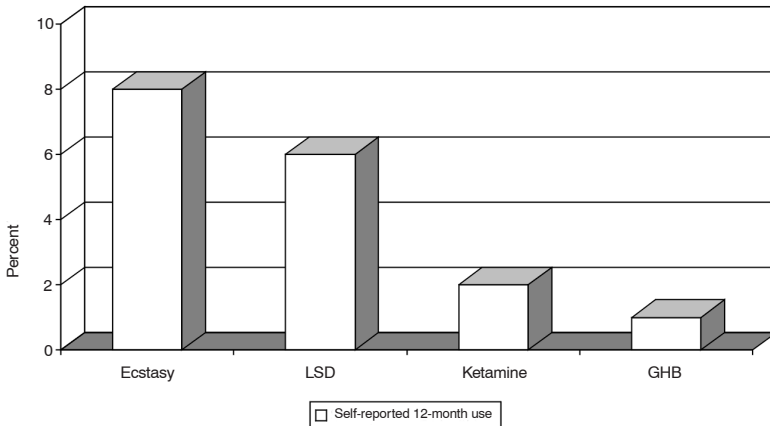
Correlates of EOCD Use

Table 2 presents a comparison between self-reported 12-month EOCD users (n = 181) and those high school seniors who reported no 12-month EOCD use (n = 1,380). Compared to the students who re-

TABLE 1. Demographic Characteristics of High School Seniors (N = 1,561)

Variable	Frequency	
Sex		
Female	53%	
Race/Ethnicity		
White	82%	
Age		
18 and over	51%	
Residence		
Small town	29%	}52%
Suburbs	23%	
Medium city	13%	
Country	12%	
Large city	12%	
Very large city	6%	
Farm	4%	

FIGURE 1. Self-Reported 12-Month Use of Ecstasy and Other Club Drugs (EOCD) Among High School Seniors (N = 1,561)



ported no 12-month EOCD use, past-year EOCD users were significantly more likely to be white (96% v. 80%, $p < 0.001$), to live in the suburbs (32% v. 22%, $p < 0.01$), and to have used *all* other drugs of abuse within the past 12 months, including alcohol.

While there were no statistically significant differences between users and non-users with respect to levels of parental education, students who reported no 12-month EOCD use were significantly more likely than past-year EOCD users to have religion as a very important part of their life (28% v. 11%, $p < 0.001$). Compared to students who reported no 12-month EOCD use, 12-month users were significantly more likely (57% v. 34%, $p < 0.001$) to have received a traffic violation (e.g., speeding ticket) during the 12 months preceding the interview and to approve of the regular use of most illegal drugs, including marijuana (58% v. 15%, $p < 0.001$) and cocaine (12% v. 3%, $p < 0.001$).

Logistic Regression

To supplement our descriptive findings, we utilized logistic regression to identify predictors of 12-month EOCD use. The dependent variable in the current model was self-reported use of EOCD during the 12 months preceding the interview. The 20 independent variables included *all* significant correlates of 12-month EOCD use identified in Table 2.

TABLE 2. Comparisons of 12-Month EOOD Users to Non-12-Month EOOD Users (N = 1,561)

	12-Month EOOD Users (n = 181)	Non-12-Month EOOD-Users (n = 1,380)
Sex		
Female	48%	54%
Age		
18 and over	53%	51%
Race/Ethnicity		
White	96%*	80%*
Type of residence		
Small town	32%	29%
Suburbs	32%**	22%**
Medium city	14%	13%
Country	9%	13%
Large city	6%	12%
Very large city	3%	7%
Farm	4%	4%
Alcohol and other drug (AOD) use		
12-month alcohol use	94%*	70%*
12-month marijuana use	88%*	29%*
12-month powder cocaine use	25%*	1%*
12-month crack cocaine use	8%*	< 1%*
12-month heroin use	9%*	< 1%*
12-month other psychedelic drug use	34%*	1%*
12-month amphetamine use	48%*	6%*
12-month barbiturate use	31%*	2%*
12-month tranquilizer use	32%*	2%*
12-month inhalant use	22%*	4%*
12-month narcotic use	40%*	2%*
Father's educational level		
Grade school/some high school	9%	10%
High school graduate	30%	27%
Some college	14%	17%
College graduate/graduate school	42%	40%
Mother's educational level		
Grade school/some high school	10%	7%
High school graduate	25%	30%
Some college	22%	20%
College graduate/graduate school	40%	41%

TABLE 2 (continued)

	12-Month EOCD Users (n = 181)	Non 12-Month EOCD Users (n = 1,380)
Is religion important in your life?		
Not important	19%	11%
Little important	22%	21%
Partly important	22%	26%
Very important	11%*	28%*
Have you received a traffic ticket within the past 12 months?		
Yes	57%*	34%*
Approve of using the following drugs regularly:		
Marijuana	58%*	15%*
Heroin	7%*	2%*
Barbiturates	12%*	3%*
Amphetamines	16%*	4%*
Cocaine	12%*	3%*

*Chi-square significant at the $p < 0.001$ level.

**Chi-square significant at the $p < 0.01$ level.

The results of the logistic regression model are shown in Table 3. If a high school student reported heroin use in the 12 months preceding the interview, the odds ratio (OR) of 12-month EOCD use was almost 29 times as high than for a student who reported no 12-month heroin use, holding all other variables constant. If a high school student reported the use of other psychedelic drugs (e.g., PCP) in the 12 months preceding the interview, the OR of 12-month EOCD use was 13 times as high than for a student who reported no 12-month use of other psychedelic drugs, holding all other variables constant. Finally, white students were almost twice as likely as their non-white counterparts to report the use of EOCD in the 12 months preceding the interview. These data indicate that, within our sample of high school seniors, the use of heroin and other psychedelic drugs within the 12 months preceding the interview were the two strongest predictors of 12-month EOCD use.

DISCUSSION

The use of EOCD is unquestionably injurious to the human body. The physical and psychological effects associated with ecstasy use, for

TABLE 3. Logistic Regression on 12-Month EOCD Use

	Multiple Logistic Regression Model	
	OR	CI
White	1.91	.83-4.42
Suburbs	1.17	.72-1.91
12-month alcohol use	.87	.40-1.91
12-month marijuana use	5.71	3.10-10.50
12-month powder cocaine use	3.62	1.22-10.71
12-month crack cocaine use	.55	.09-3.33
12-month heroin use	28.74	2.22-327.89
12-month other psychedelic drug use	13.44	5.50-32.86
12-month amphetamine use	2.18	1.21-3.93
12-month barbiturate use	2.50	1.18-5.30
12-month tranquilizer use	1.83	.87-3.85
12-month inhalant use	1.18	.57-2.45
12-month narcotic use	4.04	2.14-7.64
Religion is very important in my life	.60	.31-1.14
Traffic ticket in past 12 months	1.23	.78-1.93
Approve of regular MJ use	1.56	.95-2.58
Approve of regular heroin use	.93	.12-6.96
Approve of regular barbiturate use	4.25	.70-25.71
Approve of regular amphetamine use	.49	.12-1.96
Approve of regular cocaine use	.81	.16-4.05

example, include involuntary teeth clenching, nausea, depression, memory loss, paranoia, and serotonin depletion (Morgan, 2000; Ricaurte et al., 2000). Ketamine ingestion can lead to impaired motor functioning, high blood pressure, and depression (Dotson et al., 1995). GHB is a central nervous system (CNS) depressant that sedates the body and slows the heart rate to dangerous levels (O’Connell et al., 2000), while LSD use can lead to increased blood pressure, tremors, and abnormalities in sensory perceptions (Rome, 2001).

Data for the current analysis were collected in 2000 from a sample of 1,561 high school seniors surveyed through the MTF study. Twelve-month self-reports for ecstasy, LSD, Ketamine, and GHB were 8%, 6%, 2%, and 1%, respectively. Compared to students who reported no 12-month EOCD use, EOCD users were significantly more likely to be white, to

live in the suburbs, and to have used *all* other drugs during the past 12 months, including alcohol, marijuana, powder cocaine, crack cocaine, and heroin. The race findings from the current study are consistent with a growing body of research (Arria et al., 2002; Yacoubian, 2002a; Yacoubian et al., 2002; Yacoubian & Urbach, in press) that has identified the use of EOCB as primarily a white phenomenon. These results suggest that EOCB education and prevention programs might benefit from greater sensitivity to racial differences. Schools comprised primarily of white students, for example, would benefit from EOCB education programs considerably more than schools whose racial composition is mixed or predominantly non-white.

The strong relationship between 12-month EOCB use and the use of a vast array of other drugs during the 12 months preceding the interview suggests that EOCB-using high school seniors are significantly more likely to use other drugs than their non EOCB-using counterparts. The extent to which these high school seniors are polydrug users, however, is difficult to know. Future research should consider inquiring about patterns of EOCB ingestion. Questions could be posed about the extent to which users typically use EOCB with alcohol or other drugs and the extent to which users seek out EOCB cut with other drugs.

The findings for religion and traffic violations are consistent with traditional theories of juvenile delinquency. That non-EOCB users were significantly more likely to have religion as a very important part of their life is consistent with a social bonding/control perspective of juvenile delinquency. That is, a strong religious background would be an example of commitment to conventional values and activities (Hirschi, 1969). That 12-month EOCB users were significantly more likely to have received a traffic violation (e.g., speeding ticket) is consistent with Gottfredson and Hirschi's (1990) general theory of crime, which states that criminal behavior is a product of low self-control that manifests itself in thrill-seeking behaviors or behaviors that result in immediate gratification (e.g., speeding and drug use).

There are two major areas for future research. While the availability of EOCB may preclude any definite conclusions about its place within the drug-using pathway (Kandel, 1975; Kane & Yacoubian, 1999), future research is needed to understand the place EOCB might have in the progression to other substances. Such an analysis, however, can only be undertaken with younger respondents. The "gateway" theory is premised on the assumption that all drugs in the pathway were available when the respondent first ingested *any* drug. Because the availability of EOCB has increased only recently, older respondents may not have had

the drugs as an option when they first experimented with drugs. Such an analysis could determine whether the use of EOCD is a product of deliberate temporal sequencing or whether it is simply an artifact of low EOCD availability. This would then influence whether prevention and treatment efforts should consider the incorporation of EOCD education into their curricula.

Second, the extent to which individuals can become dependent on the use of EOCD is still unknown. Although popular literature has suggested that the use of MDMA, for example, is non-addictive (Kuhn et al., 1998), Jansen (1999) presented three cases from London in which the criteria for dependence were met. More comprehensive data collection efforts should be undertaken, both cross-sectionally and longitudinally, to explore whether dependence can occur as a result of prolonged EOCD use. It is plausible that EOCD play a role in exposure opportunity to other drugs with established dependence liability, such as marijuana, cocaine, and heroin.

NOTES

1. While the data set was originally composed of 2,220 cases, we excluded 659 cases because of missing data. Analyses are, therefore, based on the 1,561 cases for which complete interview data were available.

2. No data on Flunitrazepam (Rohypnol) use were available.

3. While 30-day self-reports were available for ecstasy and LSD, only 12-month self-report data were available for GHB and Ketamine. As such, the current analysis used the 12-month self-reports for all four drugs.

REFERENCES

- Arria, A., Yacoubian, G., Fost, E., & Wish, E.D. (2002). Ecstasy use among club rave attendees. *Archives of Pediatrics and Adolescent Medicine* 156: 295-296.
- Buffum, J., & Moser, C. (1986). MDMA and sexual function. *Journal of Psychoactive Drugs* 18(4): 355-359.
- Cuomo, M.J., & Dymont, P.G. (1994). Increasing use of 'ecstasy' (MDMA) and other hallucinogens on a college campus. *Journal of American College Health*, 42(6), 271-274.
- Dotson, J.W., Ackerman, D.L., & West, L.J. (1995). Ketamine abuse. *Journal of Drug Issues* 25(4): 751-757.
- Gibb, J.W., & Johnson, M. (1990). MDMA: Historical perspectives. *Annals of the New York Academy of Sciences* 600: 601-611.
- Gottfredson, M., & Hirschi, T. (1990). *A General Theory of Crime*. Palo Alto, CA: Stanford University Press.

- Hirschi, T. (1969). *Causes of Delinquency*. Berkeley, CA: University of California Press.
- Jansen, K.L.R. (1999). Ecstasy (MDMA) dependence. *Drug and Alcohol Dependence* 53: 121-124.
- Johnston, L.D., O'Malley, P.M., & Bachman, J.G. (2000). *National Survey Results on Drug Use from the Monitoring the Future Study, 1975-1999* (Volumes I and II). Rockville, MD: U.S. Department of Health and Human Services.
- Kandel, D.B. (1975). Stages in adolescent involvement in drug use. *Science*, 190, 912-914.
- Kane, R.J., & Yacoubian, G. (1999). Patterns of drug escalation among Philadelphia arrestees: An assessment of the Gateway Theory. *Journal of Drug Issues*, 29(1), 107-120.
- Klitzman, R.L., Pope, H.G., & Hudson, J.I. (2000). MDMA ("ecstasy") abuse and high-risk sexual behaviors among 169 gay and bisexual men. *American Journal of Psychiatry* 157: 1162-1164.
- Kuhn, C., Swartzwelder, S., & Wilson, W. (1998). *Buzzed*. New York: W.W. Norton and Company.
- Leinwand, D. (2001, August 28). Popular 'club drugs' move in mainstream scene. *USA Today*.
- Leinwand, D., & Fields, G. (2000, April 19). Crack down on Ecstasy. *USA Today* pp. A1, A4.
- Lynskey, M., White, V., Hill, D., Letcher, T., & Hall, W. (1999). Prevalence of illicit drug use among youth: Results from the Australian School Students' Alcohol and Drugs Survey. *Australian and New Zealand Journal of Public Health*, 23(5), 519-524.
- Meilman, P.W., Gaylor, M.S., Turco, J.H., & Stone, J.E. (1990). Drug use among college undergraduates: Current use and 10-year trends. *The International Journal of the Addictions*, 25(9), 389-395.
- Mieczkowski, T., Barzelay, D., Gropper, B., & Wish, E.D. (1991). Concordance of three measures of cocaine use in an arrestee population: Hair, urine, and self-report. *Journal of Psychoactive Drugs* 23: 241-246.
- Miller, P., & Plant, M. (1996). Drinking, smoking, and illicit drug use among 15- and 16-year olds in the United Kingdom. *British Medical Journal*, 313, 394-397.
- Morgan, M.J. (2000). Ecstasy (MDMA): A review of its possible persistent psychological effects. *Psychopharmacology* 152(3): 230-248.
- O'Connell, T., Kaye, L., & Plosay, J.J. (2000). Gamma-Hydroxybutyrate (GHB): A newer drug of abuse. *American Family Physician* 62(11): 2478-2482.
- Peroutka, S.J. (1987). Incidence of recreational use of 3,4-methylenedioxymethamphetamine (MDMA, "ecstasy") on an undergraduate campus. *New England Journal of Medicine* 317(24): 1542-1543.
- Ricaurte, G.A., McCann, U.D., Szabo, Z., & Scheffel, U. (2000). Toxicodynamics and long-term toxicity of the recreational drug, 3,4-methylenedioxymethamphetamine (MDMA, "ecstasy"). *Toxicology Letters* 112-113: 143-146.
- Rome, E.S. (2001). It's a rave new world: Rave culture and illicit drug use in the young. *Cleveland Clinic Journal of Medicine* 68(6): 541-550.
- Yacoubian, G. (in press (c)). The emergence of ecstasy: Findings from the National Household Survey on Drug Abuse. *Justice Policy Journal*.
- Yacoubian, G. (in press (b)). Correlates of ecstasy use among high school seniors surveyed through Monitoring the Future. *Drugs: Education, Prevention & Policy*.
- Yacoubian, G. (in press (a)). Estimating the prevalence of recent ecstasy use among national arrestees. *Federal Probation*.

- Yacoubian, G., & Urbach, B.J. (in press). Exploring the temporal relationship between race and the use of ecstasy: Findings from the National Household Survey on Drug Abuse. *Journal of Psychoactive Drugs*.
- Yacoubian, G., Arria, A., Fost, E., & Wish, E.D. (2002). Estimating the prevalence of ecstasy use among juvenile offenders. *Journal of Psychoactive Drugs* 34(2): 209-213.
- Yacoubian, G. (2002b). Correlates of ecstasy use among 10th graders surveyed through Monitoring the Future. *Journal of Psychoactive Drugs* 34(2): 225-230.
- Yacoubian, G. (2002a). Assessing the temporal relationship between race and ecstasy use among high school seniors. *Journal of Drug Education* 32(3): 213-225.
- Yacoubian, G. (2000). Reassessing the need for urinalysis as a validation technique. *Journal of Drug Issues* 30(2): 323-334.

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