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Polydrug use among club-going young adults recruited through time-space sampling

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Abstract

Though some researchers have indicated club drug users are more likely to be polydrug users, there remains little known about the prevalence and specific combinations of the substances they use. Between 2004-2006, and using time-space sampling, a stratified sample of 400 18-29 year old New York City club-going drug-using young adults were recruited into the *Club Drugs and Health Project*. Most participants (91.7%) had engaged in polydrug use and 1,670 combinations of drugs were reported. Ecstasy (86.6% of users) and cocaine (85.7% of users) were the two most frequently reported club drugs used in combination with other substances. In terms of poly-club-drug combinations, ecstasy appeared to be the “universal compliment” as this drug was most often cited in combinations with other club drugs (specifically ecstasy + ketamine, ecstasy + cocaine, ecstasy + GHB). Other frequently cited drug combinations included cocaine and marijuana, ecstasy and marijuana, LSD and marijuana, and cocaine and alcohol. These data highlight the need to develop drug health education and prevention messages targeted at polydrug use.

Keywords

Time-space sampling; club drugs; polydrug; cocaine; MDMA/ecstasy

Introduction

“Club drugs” encompass a diverse range of substances that emerged during the 1990s as major drugs of use and abuse.¹ Club drugs are a range of psychoactive substances which include

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¹The journal's style utilizes the category *substance abuse* as a diagnostic category. Substances are used or misused; living organisms are and can be *abused*. Editor's note.

MDMA/ecstasy (methylenedioxyamphetamine; herein ecstasy), crystal methamphetamine, cocaine, ketamine, LSD/acid (d-lysergic acid diethylamide), and GHB (γ -hydroxybutyrate) and its derivatives (Leshner, 2000; Maxwell, 2005; Nanín & Parsons, 2006). These substances received their designation as club drugs specifically because of their link to club, dance, and rave culture (McCambridge, Mitcheson, Winstock, & Hunt, 2005; Nanín & Parsons, 2006), and have been found particularly common among young adults ages 18-29 participating in urban subcultures (Measham, Parker, & Aldridge, 1998; Parsons, Halkitis, & Bimbi, 2006).

Research has shown that club drugs are associated with varying negative health consequences, both acute and long-term, attributable to overdose and abuse (Degenhardt, Darke, & Dillon, 2003; Espinosa et al., 2001; Miró, Nogue, Espinosa, To-Figueras, & Sánchez, 2002; Morgan, Monaghan, & Curran, 2004). These consequences remain of particular concern because club drug users have been found to be highly likely to engage in the practice of polydrug use (Fendrich, Wislar, Johnson, & Hubbell, 2003; Parsons, Halkitis et al., 2006). Polydrug use – the consecutive or simultaneous use of two or more substances – has extended the public health concerns related to club drug use since polydrug “cocktails” are consumed by club drug users to produce specific instrumental effects (Hansen, Maycock, & Lower, 2001; Narvaez, 2001). Numerous studies have identified negative physical and psychological effects from polydrug use (Mathias & Zickler, 2001; Medina & Shear, 2007; Parrott, Milani, Parmar, & Turner, 2001; Parrott, Sisk, & Turner, 2000), including drug overdose (Coffin et al., 2003), drug dependence (Leri, Bruneau, & Stewart, 2003), decreased cognitive functioning (Dillon, Copeland, & Jansen, 2003), psychiatric comorbidity (Lynskey et al., 2006), and death (Phillips, Barker, & Eguchi, 2008). For example, one recent study of 25 male polydrug users (compared with 26 non-drug-using healthy males) found poor outcomes related to impaired learning; acquisition, reversal and extinction of conditioned responses; latent inhibition; and anhedonia (Stevens, Peschk, & Schwarz, 2007). A study that compared individuals who only used cocaine with those who used cocaine and opioids found that polydrug users had greater problems with depression, trait anxiety, psychopathology, and maladjustment (Mallow, West, Corrigan, Pena, & Lott, 1992). Another study examined more than 49 million death certificates from 1983-2004 and found a 3196% increase in fatal medication combinations resulting from combining alcohol and/or street drugs with prescription medications (Phillips et al., 2008). These data exemplify the need to understand the patterns and prevalence of polydrug use, and develop innovative drug education and prevention programs targeting these practices.

Definitions of polydrug use have varied (Ives & Ghelani, 2006). Most often, polydrug use has been specified as actively combining two or more substances at the same time (i.e., simultaneous, concomitant) (Barrett, Darredeau, & Pihl, 2006; Clatts, 2005; Collins, 1998; Eiden, Stevens, Schuetze, & Dombkowski, 2006; Kerr et al., 2006; Lankenau & Clatts, 2002; Leri et al., 2003; Mallow et al., 1992). An example of simultaneous use would be the inhalation of a mixture of ecstasy and Ketamine in powdered form. Others have classified polydrug users as individuals who actively use more than one drug, though not necessarily using them at the same time (Medina & Shear, 2007). This has also been termed “co-use” (Lankenau & Clatts, 2002) and “concurrent use” (Midanik, Tam, & Weisern, 2007). An example of concurrent use would be the use of cocaine while already under the influence of GHB. Yet, concurrent use should not be viewed as two separate drug use events. Some users take certain club drugs in sequences so as to induce certain responses at specific points over the course of an evening. These sequences may be just as integral in the patterns of polydrug related morbidity as those of simultaneous use. Some research on polydrug has not specified its meaning, or has combined both concomitant and non-concomitant polydrug use (Finlinson, Colón, Robles, & Soto-López, 2006; B. F. Grant & T. C. Harford, 1990; B. F. Grant & T. C. Harford, 1990; Stevens et al., 2007). Because of the negative effects attributable to combining

substances (either concomitantly or concurrently), this analysis will use the term polydrug specifically to mean both.

Researchers have investigated motivations for polydrug use among a wide range of drug users (Finlinson et al., 2006; Hansen et al., 2001; Leri et al., 2003). Though there are a variety of reasons one may choose to combine substances, these can be distilled into four broad categories. In some instances individuals may use one drug to counteract the effects of another (e.g., taking a sedative with a stimulant to help “come down off” the stimulant), or to compliment the effects of two different drugs (e.g., combining LSD with ecstasy to increase psychotropic properties). A third reason may be to enhance one or more drug's effects (e.g., combining alcohol with prescription painkillers in order to intensify the effects of the painkillers), and a fourth is to prolong a drug's effects and/or create new ones. An example would be combining alcohol with cocaine, which produces cocaethylene in the bloodstream, a third and more toxic substance that creates additional euphoric effects, but metabolizes slower than cocaine (Hayase, Yamamoto, & Yamamoto, 1999; Lepere & Charbit, 2002; Sobel & Riley, 1999; Wilson, Jeromin, Garvey, & Dorbandt, 2001).

Though researchers have identified patterns and prevalence of polydrug use among several street-based and drug-injecting samples (Hasin, Grant, Endicott, & Harford, 1988; Kerr et al., 2006; Lankenau & Clatts, 2002; Leri et al., 2003; Schutz, Vlahov, Anthony, & Graham, 1994), there have been fewer explorations among club drug users, a group who may be socially and economically different from both street-based and drug-injecting samples (Parsons, Halkitis et al., 2006). In addition, much of our knowledge about polydrug use has been drawn from small and often convenience-based samples. As noted earlier, research has indicated that club drug users may be even more likely to experiment with polydrug use, particularly poly-club-drug use (Hansen et al., 2001; Lankenau & Clatts, 2002; Narvaez, 2001). Furthermore, poly-club-drug use may be even more common among younger adults aged 18-29 who, as a result of their ages and transition from adolescence into adulthood, are developmentally more prone to experimentation (Kelly, Parsons, & Wells, 2006; McCaughan, Carlson, Falck, & Siegal, 2005). Most importantly, though club drugs have been classified together as a unified category, they have varying epidemiological implications and as such may have varying profiles with regard to polydrug use. For these reasons, it remains critical to explore the varied patterns of polydrug use among young club drug users.

Current focus

Knowing the plethora of negative physical and psychological effects that can result from polydrug use, it is vital to first develop a comprehensive profile of the prevalence and patterns of polydrug use among club drug users. This analysis reports baseline data from the *Club Drugs and Health Project*, which, using the probability-based method of time-space sampling, recruited a stratified sample of 400 urban club drug-using young adults who frequented club venues in New York City (100 gay and bisexual men, 100 lesbian and bisexual women, 100 heterosexual men, 100 heterosexual women; all ages 18-29). Using computer-assisted interviewing, participants quantitatively and qualitatively indicated their experiences combining club drugs both with other club drugs and other substances. With the goal of identifying arenas where health promotion and drug education should be targeted, this analysis reports on the prevalence and types of polydrug patterns among a sample of urban club drug users.

Materials and Methods

The *Club Drugs and Health Project*, broadly conceived, was a study of health issues among young adults (ages 18–29) involved in New York City dance club scenes. The project was designed to examine the patterns and contexts of club drug use and its associated risks among

club-going young adults with the intent of assessing the potential for prevention and education efforts. The six specific club drugs of interest were ecstasy, ketamine, GHB, methamphetamine, cocaine, and LSD/acid. The assessments utilized in the study were designed to capture a broad understanding of club drug use among club-going young adults as well as basic information on other health issues relevant to this population. The data drawn upon for this paper are derived from the baseline assessments conducted for the project, described below.

Participants and procedures

Time-space sampling (MacKellar, Valleroy, Karon, Lemp, & Janssen, 2006; Muhib et al., 2001; Stueve, O'Donnell, Duran, Sandoval, & Blome, 2001), a probability-based method, was used to systematically generate a sample of club-going young adults in New York City. Between December 2004 and December 2006, using a random-digit generator, venues were selected randomly from a numerated list of 223 dance clubs, bars, and lounges in New York City as well as special events throughout the city (Kelly et al., 2006; Parsons, Kelly, & Wells, 2006). Each weekend recruitment teams were sent to randomly assigned venues. Field staff then systematically approached club patrons as they crossed a predefined imaginary threshold (e.g., the entrance) during 3-hour shifts selected with random start times (ranging from 9 p.m. to 3 a.m.). During the first seven months of recruitment, randomization additionally occurred at the individual level (i.e., randomizing venue, time, and approaching every n^{th} participant); however this added layer of randomization was found to produce samples that were not significantly different from those using a two-tier-only (i.e., venue and time) randomization schema (Parsons, Groves, & Kelly, in press-b).

In the field, potential participants were approached with the following script: "Hi, my name is [NAME] and I am from Hunter College. We are conducting a brief 2-minute survey. Can I have just 2 minutes of your time?" If the patron provided verbal assent, trained staff conducted the surveys with the use of Palm Pilots[®] equipped with Handiworx survey software. If the patron refused, field staff noted the refusal and estimated age, gender, and race/ethnicity. These estimations were ascertained solely for supervision and global tracking of refusal rates and demographic characteristics of those declining to participate. Field staff members were instructed not to administer surveys to anyone who was visibly impaired by intoxicants, and no incentives were provided for completing the brief 2-minute survey. Recruitment methods have been described in detail elsewhere (Parsons, Groves, & Kelly, in press-a; Parsons et al., in press-b).

Eligibility criteria for participation in the larger *Club Drugs and Health Project* were embedded in this brief survey. To be eligible for the larger study, individuals had to report the use of any of the six club drugs listed previously at least three times in the previous year and at least once in the prior three months. Additionally, only individuals aged 18–29 years old were eligible. If a patron was found eligible, staff explained the larger project, distributed recruitment materials with project contact information, and collected contact information from the individual. Employing a stratified sampling schema, we enrolled 100 gay and bisexual men, 100 lesbian and bisexual women, 100 heterosexual men, and 100 heterosexual women into the project ($N = 400$). Those who were screened as eligible but declined to participate did not significantly differ from those who did participate with regard to age and race/ethnicity (Kelly et al., 2006; Parsons, Kelly et al., 2006). All procedures were approved by the Institutional Review Board of the second author.

Measures

Qualitative and quantitative assessments were conducted at the community-based research offices of the investigators in private rooms to ensure confidentiality. Upon completing informed consent, participants were placed at computers equipped with Audio Computer

Assisted Self Interview (ACASI) software. ACASI uses voice recordings so that participants hear (through headphones) and see (on the screen) each question and response list. Participants enter their responses directly into the computer using a keyboard or mouse.

Demographic characteristics—Participants self-reported their gender, race and ethnicity, age, education level, employment status, and sexual orientation from a list of possible choices.

Drug use—Participants completed a battery of questions on their lifetime use and recent use (past 4 months), for the six club drugs (ecstasy; ketamine; GHB; methamphetamine; cocaine; LSD/acid), alcohol, heroin, marijuana, Psilocybin/mushrooms, and prescription drug abuse. To ensure drug name recognition, ACASI prompted participants with vernacular terms (e.g., crystal, tina, and meth for methamphetamine).

Polydrug use—For each of the six club drugs, participants were asked two questions. First, if they had ever combined the drug with another one (yes/no). Second, those indicating they had were asked which substances they had combined. For example, those answering the question “Have you ever used cocaine in combination with other drugs?” in the affirmative were then asked, “Which drugs have you combined cocaine with?” Using the keyboard, participants entered their response(s) into a blank space in ACASI. The list of these responses were printed out and using a tally sheet with a matrix-formatted table (provided in Table 3) these responses were all collapsed into meaningful categories (e.g., responses such as “THC,” “weed,” or “pot” were recoded “marijuana”).

Results

The sample was racially and ethnically diverse and, overall, well educated (See Table 1). The mean age of the sample was 23.9 ($SD = 2.75$, Range 18-29). There were no gender or sexual orientation differences in racial or ethnic diversity, employment status, or status as a student. Gay and bisexual men ($M = 24.6$) were older than heterosexual women ($M = 23.5$), $F(3, 396) = 3.09$, $p < .05$, and were the most likely to report making over \$30K in the last year (49.5%, versus 38% among lesbian and bisexual women, 27% among heterosexual men, and 30% among heterosexual women; $\chi^2(6) = 14.1$, $p < .05$). Finally, gay and bisexual men were the most likely to report being single (78%), compared to lesbian and bisexual women (54%), heterosexual men (54%), and women (59%), $\chi^2(3) = 16.4$, $p < .001$. There were no other demographic differences across the four groups.

Drug use

Cocaine (94.5%, $n = 378$) was the most common club drug ever used by participants and the most common drug used in the last 4 months (90.2%, $n = 361$). Ecstasy was second (87.8%, $n = 351$ ever; 53.5%, $n = 214$ recent), followed by LSD (59.3%, $n = 237$ ever; 19.5% $n = 78$ recent), ketamine (51.5%, $n = 206$ ever; 20%, $n = 80$ recent), methamphetamine (42.3%, $n = 169$ ever; 16.8%, $n = 67$ recent); and GHB (21.5%, $n = 86$ ever; 5.0%, $n = 20$ recent). More information on the global patterns and prevalence of club drug use has been reported elsewhere (Parsons et al., in press-a).

Participants also reported a range of other substances they had ever used, including alcohol (100%, $n = 400$), marijuana (99%, $n = 396$), Psilocybin/mushrooms (76%, $n = 304$), heroin (15.8%, $n = 63$), and a variety of non-prescribed prescription drugs including pain killers (e.g., Vicodin, Codeine; 79.8%, $n = 319$), sedatives (e.g., Valium, Xanax; 64.8%, $n = 259$), stimulants (e.g., Ritalin, Adderall; 60.8%, $n = 243$), and erectile dysfunction drugs (e.g., Viagra, Cialis, Levitra; 11.3%, $n = 45$). More information on prescription drug abuse from this sample has been reported elsewhere. (Kelly & Parsons, 2007)

Polydrug use

As we could not anticipate the complete range of different polydrug combinations that participants would report, participants were specifically probed around their polydrug use while using each of the six club drugs and provided an opportunity to type (using a keyboard) polydrug combinations directly into ACASI. Nearly all participants (91.7%, $n = 367$) had combined drugs at one point in their lives. The prevalence of polydrug use closely mirrored the prevalence of club drug use such that polydrug use was highest for ecstasy (86.6% of ecstasy users had combined ecstasy with another drug), followed by cocaine (85.7%), ketamine (71.4%), LSD (69.2%), methamphetamine (66.3%), and GHB (54.7%). Values are reported in Table 2. In contrasting reported polydrug use by gender and sexual orientation, there were no significant differences in polydrug use of ecstasy, ketamine, GHB, methamphetamine, or cocaine. Heterosexual men were the most likely to have used LSD with another substance, $\chi^2(3) = 11.87, p < .01$ (see Table 2).

Among the 400 participants, with the six different club drugs, a total of 1,098 affirmative responses (e.g., combined [club drug name] with another drug? -- "yes") were received. From these 1,098 affirmative responses, the follow up question resulted in participants having qualitatively typed a total of 1,670 drug responses into ACASI. These 1,670 responses were collapsed into meaningful categories (e.g., responses such as THC, pot, or weed were coded "marijuana") and are reported in Table 3. In addition to combining club drugs with other club drugs, participants also indicated having combined club drugs with alcohol, marijuana, Psilocybin/mushrooms, and various prescription drugs used non-medically.

The most frequent polydrug combinations were reported for ecstasy ($n = 681$) and cocaine ($n = 677$), followed by LSD ($n = 309$), ketamine ($n = 259$), methamphetamine ($n = 229$), and GHB ($n = 80$). Not only were cocaine and ecstasy the most common drugs ever used, and the most common drugs used in conjunction with another drug, they also resulted in the largest number of possible drug combinations. In terms of polydrug combinations specifically with other club drugs, ecstasy was the most frequently endorsed drug (i.e., a universal compliment). For example, 351 participants reported ecstasy use and 206 participants reported ketamine use. Meanwhile, 198 participants reported having used both at one point in their lives (though not necessarily at the same time). Out of these 198 participants who had previously used ecstasy and ketamine at one point in their lives, 41.4% ($n = 82$) had specifically combined the two drugs. In addition, 37.4% ($n = 125$ of 334) of participants who had used ecstasy and cocaine had at one point combined the two, and 34.6% (28 of 81) of individuals having previously used ecstasy and GHB had at one point combined the two. Excluding ecstasy, other poly-club-drug combinations (i.e., club drugs with club drugs) were less common or non-existent (e.g., no participants combined GHB with LSD).

In terms of polydrug combinations between club drugs and other drugs, the four most common drug combinations were cocaine and marijuana ($n = 226$, 60.3% of cocaine and marijuana users had combined both), ecstasy and marijuana ($n = 177$, 50.6% of ecstasy and marijuana users had combined both), LSD and marijuana ($n = 117$, 49.4% of LSD and marijuana users had combined both), and cocaine and alcohol ($n = 153$, 40.5% of cocaine users). All other combinations are provided in Table 3.

Discussion

Much of our knowledge on the patterns and prevalence of polydrug use has been limited to street-based or injection-drug-using samples (Hasin et al., 1988; Kerr et al., 2006; Lankenau & Clatts, 2002; Leri et al., 2003; Schutz et al., 1994). However, recent research has identified increases in both club drug use and polydrug use, and linked such use specifically to young adults (Measham et al., 1998) and club culture (McCambridge et al., 2005). Yet, these

explorations have not distilled the specific patterns of polydrug use among club drug users. Though researchers have found polydrug use may be more common among club drug users (Hansen et al., 2001; Kelly et al., 2006; Lankenau & Clatts, 2002; Narvaez, 2001; Parsons, Halkitis et al., 2006), there is a dearth of knowledge specifically on the patterns and prevalence of polydrug combinations among club drug users. Furthermore, much of our knowledge on emerging trends in club drug use has been isolated to purely convenience-based samples (thus limiting generalizability) or national surveys of drug trends among young adults (which are often devoid of the cultural characteristics inherent to *club* drug use).

Addressing this limitation, and using the probability-based method of time-space sampling as a recruitment strategy, a stratified sample of 400 urban club drug-using young adults provided extensive data on their polydrug use. Though the *Club Drugs and Health Project* was globally focused on club drug use, we found alarming rates of polydrug use, as nearly all participants (91.7%) indicated having previously combined at least one club drug with another substance. These high prevalence rates suggest the need for interventions targeting polydrug use among such individuals. As participants were recruited via night clubs/bars, these venues may be an ideal environment both for identifying polydrug users and delivering drug education, prevention, or intervention programs.

Patterns of polydrug use closely mirrored the prevalence of club drug use. Not only were ecstasy and cocaine the most common drugs participants had ever used, they were also the most common for mixing with another substance. Furthermore, in addition to being the most common drugs participants had mixed with other substances, cocaine and ecstasy also resulted in the greatest number of reported polydrug combinations. With the exception of LSD, there were no significant gender or sexual orientation differences in whether or not participants had ever combined ecstasy, ketamine, GHB, methamphetamine, or cocaine with another substance. Though researchers have identified gender and sexual orientation differences in club drug use and polydrug use at the broader population level (Measham, Aldridge, & Parker, 2002; Van Etten, Neumark, & Anthony, 1999), these data indicate such differences may not be as prevalent in sub-populations (i.e., among club drug users). Given the need to develop subculturally-tailored interventions and drug education programs that can be easily delivered to target groups, these data indicate that polydrug use has crossed gender and sexual identity “boundaries” within club going populations.

Focusing on the specific polydrug combinations that participants reported, ecstasy emerged as the frontrunner in poly-*club*-drug combinations. In essence, ecstasy served as a “universal compliment” for mixing among club drugs. These data implicate the need to further investigate the physical consequences and social motivations underlying combining ecstasy with other club drugs. Further, these data highlight the need to develop polydrug health education and prevention programs centered specifically around ecstasy.

In assessing club drug combinations with other drugs, participants frequently cited mixing cocaine with alcohol and marijuana. Though participants frequently cited alcohol and club drug combinations, these numbers may be underestimated, as not all participants may have viewed alcohol as a “drug” when responding to questions, though clearly many did. The use of ACASI enabled us to ask sensitive questions while avoiding potential interviewer effects and response biases. In contrast, we may have lost some precision gained from interviewer probing. Nevertheless, it warrants mentioning that alcohol and club drug combinations were cited 349 times. Should this be an underestimate of the true prevalence of alcohol and club drug combinations among club drug users, these data exemplify the need to develop and target innovative drug and alcohol prevention programs and interventions for club drug using young adults. Further, it may be particularly essential to disseminate health education about the

dangers associated with combining alcohol and cocaine (Hayase et al., 1999; Lepere & Charbit, 2002; Sobel & Riley, 1999; Wilson et al., 2001).

Study's limitations

As is the case with socio-behavioral research, several limitations must be highlighted. In an effort to develop an in-depth understanding of club-drug use among urban young adults, all data were gathered from adults aged 18 to 29 who were participating in New York City nightlife. In so doing, these analyses have painted a comprehensive picture of drug use among this population, but these results may not generalize to other populations. Further, as the overarching goal of the *Club Drugs and Health Project* was to assess patterns and contexts of club drug use, only active drug users were interviewed. Though the participants recruited for this study do not represent a true random sample, all participants were identified via time-space sampling (a probability-based approach), and thus we believe our sample is representative of New York City club-going club drug-using young adults. However, these findings may not generalize to other populations. Although our data are limited to participants recruited from nightclubs and bars, these visible venues are known locations at which club-drug users can be actively engaged, thus these data speak to other researchers and health professionals seeking to effectively place educational and preventative initiatives with target populations of interest.

Though these data highlight many polydrug combinations, future research should consider additionally assessing the frequency of polydrug combinations, the quantity of drugs used during polydrug use, and measure potential time-lapse between consuming multiple drugs on a single occasion. Further, our measurement of polydrug use was limited to dyadic combinations of club drugs with another drug. As a result, it is uncertain the extent that participants may have combined three or more substances at the same time. Though this analysis reported on the patterns of use, it remains equally vital to understand and contextualize the social motivations (both exogenous and endogenous) underlying polydrug use. Such data might be captured best using methods such as field observations, ethnography, and in-depth qualitative interviews.

Our measurement of polydrug combinations relied on participants keying responses directly into ACASI. Participants in the *Club Drugs and Health Project* were overall well educated and computer literate, thus we do not believe this inhibited participant responses; however, this may present a barrier with other populations. Although it is possible to program ACASI with complexly designed measures and skip patterns, such assessment might be better captured via other qualitative methods including semi-structured in-depth interviews, case histories, or field observation, or through more sophisticated quantitative techniques such as timeline follow-back measures (DeMarce, Burden, Lash, Stephens, & Grambow, 2007) or daily diary assessments (Mustanski, 2007). As this analysis reports on a variety of dyadic polydrug combinations, it serves as a benchmark from which to compare polydrug prevalence and patterns to other populations. In so doing, this analysis provides an index from which researchers and health/community service providers, who are seeking to provide health education and prevention, should consider targeting efforts.

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Glossary

Club Drugs

A group of substances that have been connected to club/dance scenes; ketamine, ecstasy/MDMA; GHB, cocaine, & methamphetamine.

Time-space sampling

A probability-based approach to recruiting location-based populations. Venues and times where the population of interest gathers are first identified, and then researchers randomly select times and venues in which to recruit potential participants.

Polydrug use

An umbrella term used to categorize the consumption of multiple substances either at the same time, or in sequence.

About the Authors



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Table 1

Sample characteristics

	<i>n</i>	%
Race & ethnicity		
Caucasian	247	61.8
African American	26	6.5
Latino/a	77	19.3
Asian Pacific Islander	16	4.0
Mixed and "other"	34	8.5
Education		
High school or less	45	11.3
Some college or currently in college	164	41.0
4-Year College Degree (BA, BS, BFA)	166	41.5
Graduate School	25	6.3
Income		
Less than \$10,000	124	31.0
\$10,000 to \$29,999	130	32.5
\$30,000 to \$49,999	108	27.0
\$50,000 or more	36	9.0
Employment		
Full time, 40 hours/week	175	43.8
Part time, < 40 hours/week	73	18.3
Part-time work - full time student	60	15.0
Unemployed - Student	59	14.8
Unemployed - Other	33	8.3
Relationship status, self defined		
Legally Married	4	1.0
Partner or lover	52	13.0
Boyfriend or girlfriend	99	24.8
Single	245	61.3

Table 2
Gender and sexual orientation differences in polydrug use^a

Combined ...[drug name], with other drug(s)	Total Sample		Women		Men		χ^2 (3)
	n	%	n	%	n	%	
MDMA/ecstasy	304	86.6	73	83.0	69	84.1	5.30
Ketamine	147	71.4	30	65.2	33	66.0	2.95
GHB	47	54.7	5	38.5	6	37.5	5.62
Methamphetamine	112	66.3	30	66.7	23	74.2	1.25
Cocaine	324	85.7	78	81.3	81	84.4	6.11
LSD/acid	164	69.2	42	64.6	33	64.7	11.87**

^a Percents are nested among those having tried the drug

**
 $p < .01$

Table 3
Matrix of polydrug combinations as qualitatively reported by participants (N = 400)

	Club Drugs						Other Drugs				
	MDMA/ ecstasy <i>n</i> = 351	Ketamine <i>n</i> = 206	GHB <i>n</i> = 86	Meth-amphetamine <i>n</i> = 169	Cocaine <i>n</i> = 378	LSD/acid <i>n</i> = 237	Alcohol <i>n</i> = 400	Heroin <i>n</i> = 63	Marijuana <i>n</i> = 396	Psilocybin/mushrooms <i>n</i> = 304	Misc. prescriptions (s) <i>n</i> = 355
MDMA/ecstasy, <i>n</i> = 351											
<i>n</i> who tried both drugs at one point in their lives	--	198	81	156	334	225	63	350	284	315	
<i>n</i> who combined both drugs	--	82	28	53	125	79	6	177	25	13	
% = <i>n</i> who combined both / Total <i>n</i> who tried both drugs	--	41.4%	34.6%	34.0%	37.4%	35.1%	9.5%	50.6%	8.8%	4.1%	
Ketamine, <i>n</i> = 206											
<i>n</i> who tried both drugs at one point in their lives	--		68	124	203	148	51	205	167	191	
<i>n</i> who combined both drugs	--		11	19	45	17	1	49	4	2	
% = <i>n</i> who combined both / Total <i>n</i> who tried both drugs	--		16.2%	15.3%	22.2%	11.5%	2.0%	29.9%	2.4%	1.0%	
GHB, <i>n</i> = 86											
<i>n</i> who tried both drugs at one point in their lives	--			65	85	62	31	86	71	79	
<i>n</i> who combined both drugs	--			15	7	0	0	7	0	3	
% = <i>n</i> who combined both / Total <i>n</i> who tried both drugs	--			23.1%	8.2%	--	--	8.1%	--	3.8%	
Methamphetamine, <i>n</i> = 169											
<i>n</i> who tried both drugs at one point in their lives	--			--	167	112	49	167	128	158	

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	Club Drugs					Other Drugs					
	MDMA/ ecstasy <i>n</i> = 351	Ketamine <i>n</i> = 206	GHB <i>n</i> = 86	Meth-amphetamine <i>n</i> = 169	Cocaine <i>n</i> = 378	LSD/acid <i>n</i> = 237	Alcohol <i>n</i> = 400	Heroin <i>n</i> = 63	Marijuana <i>n</i> = 396	Psylocibin/mushrooms <i>n</i> = 304	Misc. prescriptions (s) <i>n</i> = 355
<i>n</i> who combined both drugs				--	38	12	28	2	53	3	6
% = <i>n</i> who combined both / Total <i>n</i> who tried both drugs				--	22.8%	10.7%	16.6%	4.1%	31.7%	2.3%	3.8%
Cocaine, <i>n</i> = 378					--	224	378	63	375	287	343
<i>n</i> who tried both drugs at one point in their lives					--	34	153	9	226	16	24
% = <i>n</i> who combined both / Total <i>n</i> who tried both drugs					--	15.2%	40.5%	14.3%	60.3%	5.6%	7.0%
LSD/acid, <i>n</i> = 237						--	237	59	237	206	223
<i>n</i> who tried both drugs at one point in their lives						--	37	2	117	8	3
% = <i>n</i> who combined both / Total <i>n</i> who tried both drugs						--	15.6%	3.4%	49.4%	3.9%	1.3%

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-- Not Applicable