

Club Drug Use and Dependence Among Young Adults Recruited Through Time-Space Sampling

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SYNOPSIS

Objectives. Ketamine, methylenedioxymethamphetamine (MDMA/ecstasy), cocaine, gamma-hydroxybutyrate (GHB), methamphetamine, and d-lysergic acid diethylamide (LSD/acid) have been identified as “club drugs” because of their link to club culture among young adults. Yet little is known about users’ demographic differences in the prevalence of club drugs. This study sought to provide a comprehensive profile of users’ demographic differences in prevalence of club drug use and dependence.

Methods. Using time-space sampling, a stratified sample of 400 18- to 29-year-old club-going young adults was recruited into the Club Drugs and Health Project.

Results. Though participants reported using an array of club drugs, almost all participants (90.0%) were cocaine users. Although there were several sexual orientation and gender differences in recent drug exposure, patterns of use (measured in days) were fairly similar across gender, sexual orientation, and age. Finally, a majority of individuals (58.5%) met or exceeded criteria for club drug dependence, with most (61.7%) indicating cocaine was the one drug causing them significant problems.

Conclusions. Cocaine is a major drug in club culture. It is essential to develop culturally appropriate drug education and prevention initiatives for young adults using club drugs.

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“Club drugs” encompass a range of substances that emerged during the 1990s as major drugs of abuse. They include methylenedioxymethamphetamine (MDMA/ecstasy), methamphetamine, cocaine, ketamine, d-lysergic acid diethylamide (LSD/acid), and gamma-hydroxybutyrate (GHB) and its derivatives.¹⁻³ These substances were designated as club drugs specifically because of their links to club, dance, and rave culture,^{3,4} and they have been found to be common among young adults aged 18 to 29 years.⁵ Recreational club drug use has been associated with negative health consequences attributable to overdose and abuse.⁶⁻⁸

The National Survey on Drug Use and Health⁹ and the Monitoring the Future Study¹⁰ both assessed the prevalence of club drug use among young people. Although neither of these national studies assessed a complete range of club drugs, these data indicated high rates of lifetime exposure to MDMA/ecstasy (12.4% to 14.9%), cocaine (12.6% to 14.3%), and LSD/acid (7.9% to 11.2%) among young adults. While these population estimates illustrated the dispersion of drug trends, they did not assess prevalence among target populations within club and youth cultures.¹¹⁻¹⁴ A focus on these groups is vital given the link between club drugs and club culture, as well as the increasing trends of club drug use among young adults participating in club subcultures.¹⁵⁻¹⁷

Some researchers have argued that men experience more opportunities to try drugs.¹⁸ However, it is likely that frequenting dance clubs, in which there are many opportunities to experiment with drugs,¹⁷ may result in comparable opportunities for females to initiate use and, thus, minimize prevalence differences across gender. Meanwhile, young adult females have been found to be at the greatest risk of experiencing harm from club drugs¹⁹ and to report negative consequences.¹⁷ Other studies have not found gender differences in club drug use;²⁰⁻²² thus, it is critical to examine gender differences and develop contextualized explanations for them.

Although there has been increased attention to the prevalence of club drugs,⁴ and researchers have found high rates of club drug use among lesbian, gay, and bisexual individuals,²³⁻²⁹ particularly gay and bisexual men,²⁹⁻³³ little is known about how club drug use varies across demographic characteristics, including gender, sexual orientation, race/ethnicity, and age. This lack of comparison is largely a result of researchers concentrating their efforts on specific subpopulations (e.g., only gay and bisexual men), often with different measures of drug use, thus limiting cross-group comparisons. Furthermore, much of our knowledge around club drug use has drawn from convenience-based or other

nonprobability-based samples, thus limiting the generalizability of the findings.

To develop broad-reaching drug education and prevention initiatives, it is necessary to first fully investigate variance in the prevalence of drug use across subpopulations in addition to providing a descriptive profile of drug users. This information is vital given that young adulthood has been characterized by self-discovery and experimentation (including with drugs),^{5,17,34,35} that drugs have been connected to club culture, and that disproportionate rates of club drug use have been reported across sexual orientation.^{4,24,33} Building upon previous research,^{17,18,23-28,30-33} we hypothesized an interaction among club drug use, gender, and sexual orientation such that men would report higher rates of club drug use, with gay and bisexual men reporting the highest rates of use.

METHODS

The Club Drugs and Health Project was a study of the prevalence and contexts of club drugs and related health issues among young adults involved in New York City (NYC) club scenes. The specific drugs of interest in the project were MDMA/ecstasy, ketamine, GHB, methamphetamine, cocaine, and LSD/acid. This analysis describes club drug use variations across sociodemographic characteristics, specifically gender, race/ethnicity, sexual orientation, and age.

Participants and procedures

Employing time-space sampling³⁶⁻³⁸ from December 2004 to December 2006, we selected venues at random from a list of 223 NYC dance clubs and bars/lounges as well as special events throughout the city.^{11,27} Each weekend, recruitment teams were sent to randomly assigned venues. Field staff approached club patrons as they crossed a predefined threshold (e.g., the entrance) during three-hour shifts selected with random start times (from 9 p.m. to 3 a.m.). Recruiters used Palm® Pilots in the field to record responses to a brief two-minute survey for which participants received no compensation. Those who declined to take this brief survey did not significantly differ in terms of race/ethnicity or gender from those who assented to participate.

Eligibility criteria for participation were embedded in this brief survey. To be eligible, the individual had to report using any of the six club drugs at least three times in the previous year and at least once in the prior three months, and be aged 18 to 29 years. If a patron was found eligible, staff explained the 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, for a total of 400 participants. All procedures were approved by the Institutional Review Board of Hunter College in NYC. Recruitment methods, including detailed information on race/ethnicity during the screening process, have been described in further detail elsewhere.^{11,39}

Measures

During assessments, which were conducted in private rooms at the community-based research offices of the investigators, participants responded to questions on computers equipped with audio computer-assisted self-interview (A-CASI) software.

Demographic characteristics. Participants reported their gender, race/ethnicity, age, education level, employment status, and sexual orientation.

Drug use. Participants completed a battery of questions on their lifetime use, recent use (in the past four months), and frequency of recent use (number of days they used drugs in the past four months) of the six club drugs.

Club drug dependence. Dependence was assessed using a modified version of the eight-item Composite International Diagnostic Interview (CIDI) dependence scale.⁴⁰ Traditionally, this measure is used for a specific drug (e.g., “In the past 12 months, did your use of *cocaine* ever interfere with your work at school, a job, or at home?”). Because our pilot work²⁶ suggested that most participants would report using multiple club drugs, and to prevent participant fatigue, we modified the questions slightly to read “club drugs” (e.g., “. . . did your use of *club drugs* ever interfere with your work . . . ?”). A-CASI prompted participants with a reminder that club drugs were defined as any of the six drugs of interest to the study. Those participants demonstrating dependence (i.e., they answered “yes” to three or more items) were asked, “Which of the six club drugs gives you the most problems?”

Analytic plan

Analyses were conducted using SPSS Version 14.⁴¹ Where appropriate, statistical χ^2 and Fisher’s exact tests were performed.⁴² To reduce the probability of a Type 1 error, p was set at <0.01 for all Fisher’s exact tests. In the case of comparing mean days of recent drug use (a positively skewed variable), nonparametric Kruskal-Wallis χ^2 tests were performed.^{43,44}

RESULTS

Participants in the sample were racially and ethnically diverse and, overall, well-educated (Table 1). The mean age of participants was 23.9 years (standard deviation [SD] = 2.75). There were no gender or sexual orientation differences in racial/ethnic composition, employment status, or student status. Gay and bisexual men (mean [M] = 24.6) were slightly older than heterosexual women (M=23.5), ($F [3, 396] = 3.09$, $p<0.05$) and were the most likely to report making more than \$30,000 in the last year—49.5% compared with 38.0% of lesbian and bisexual women, 27.0% of heterosexual men, and 30.0% of heterosexual women; $\chi^2 (6) = 14.1$, $p<0.05$. Finally, gay and bisexual men were the most likely to report being single (78.0%) compared with lesbian and bisexual women (54.0%), heterosexual men (54.0%), and heterosexual women (59.0%), $\chi^2 (3) = 16.4$, $p<0.001$.

Patterns of drug exposure

The most frequently indicated drugs participants had ever used were cocaine (94.5%, $n=378$) and MDMA/

Table 1. Sample characteristics (n=400)

| Characteristics | N | Percent ^a |
|--|-----|----------------------|
| 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 |
| Four-year college degree (bachelor’s degree) | 166 | 41.5 |
| Graduate school | 25 | 6.3 |
| Income ^b | | |
| <\$10,000 | 124 | 31.0 |
| \$10,000 to \$29,999 | 130 | 32.5 |
| \$30,000 to \$49,999 | 108 | 27.0 |
| ≥\$50,000 | 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 |

^aPercentages may not add to 100% due to rounding.

^bTwo participants did not answer the income question.

ecstasy (87.8%, $n=351$), followed by LSD/acid (59.3%, $n=237$), ketamine (51.5%, $n=206$), methamphetamine (42.3%, $n=169$), and GHB (21.5%, $n=86$). In terms of recent use (within the past four months), cocaine (90.5%, $n=362$) was the most commonly indicated drug, distantly followed by MDMA/ecstasy (53.5%, $n=214$), ketamine (20.0%, $n=80$), LSD/acid (19.5%, $n=78$), methamphetamine (16.8%, $n=67$), and GHB (5.0%, $n=20$).

Table 2 shows gender and sexual orientation differences in lifetime and recent drug use. Gay and bisexual men (34.0%) were significantly more likely than lesbian and bisexual women (13.0%) and heterosexual women (16.0%) to have ever used GHB. In addition, gay and bisexual men (59.0%) were significantly more likely than heterosexual women (31.0%) and heterosexual men (34.0%) to have ever used methamphetamine. In contrast, heterosexual men (71.0%) were significantly more likely than heterosexual women (51.0%) and gay and bisexual men (50.0%) to have ever used LSD/acid.

In terms of recent drug use, there was a significant main effect of gender for recent GHB drug use, such that men (8.5%) were 6.13 times as likely as women (1.5%) to have reported recent use. In terms of recent methamphetamine use, men (21.1%) were 1.87 times as likely as women to report use (12.5%), with gay and bisexual men (24.0%) being the most likely to report recent methamphetamine use. Gay, lesbian, and bisexual participants (93.5%) were 2.07 times as likely as heterosexuals (87.4%) to report recent cocaine use. Finally, heterosexuals (12.5%) were 2.05 times as likely as lesbian, gay, and bisexual participants (7.0%) to report recent LSD/acid use, with heterosexual men (38.0%) driving this relationship.

Race/ethnicity. Race/ethnicity was unrelated to recent use of MDMA/ecstasy, ketamine, GHB, cocaine, or LSD/acid use. Non-Caucasian participants (22.2%) were 1.84 times as likely as Caucasian participants (13.4%) to report recent methamphetamine use. Statistical power was unavailable to distill race/ethnicity into five groups and compare or contrast differences in recent drug use.

Age, income, and status as a student. On average, recent cocaine users were significantly older than participants who had not recently used cocaine ($M=24.0$, $SD=2.69$ for users vs. $M=22.8$, $SD=2.99$ for nonusers; $t[397] = -2.77$, $p<0.01$). In contrast, recent LSD/acid users were significantly younger than participants who had not recently used LSD/acid ($M=22.4$, $SD=2.72$ for users vs. $M=24.2$, $SD=2.63$ for nonusers; $t[398] = 5.57$, $p<0.001$). There were no significant age differences

among recent users of MDMA/ecstasy, ketamine, GHB, or methamphetamine. Because income was non-normally distributed, response categories were collapsed into three roughly equal groups—less than \$10,000 (31.0%, $n=124$); \$10,000–\$29,999 (32.5%, $n=130$); and \$30,000 or more (36.0%, $n=144$). Recent LSD/acid use was also significantly related to income and status as a student, three highly related variables. Those with incomes less than \$10,000 were significantly more likely to report LSD/acid use (33.9%) than those with incomes of \$10,000–\$29,999 (20.0% reported use) and those with incomes of \$30,000 or more (6.9% reported use); $\chi^2(2) = 30.7$, $p<0.001$. Finally, students were significantly more likely than nonstudents to report recent LSD/acid use (28.6% of students vs. 15.7% of nonstudents); $\chi^2(1) = 8.88$, $p<0.01$.

Frequency/days of drug use in the last four months

Frequency of recent use closely mirrored overall drug prevalence, such that cocaine users ($n=361$) reported 10 median days of recent cocaine use (interquartile range [IQR] 4–20); MDMA/ecstasy users ($n=214$) reported 2.5 median days of MDMA/ecstasy use (IQR 1–5); ketamine users ($n=80$) reported two median days of use (IQR 1–5); LSD/acid users ($n=78$) reported two median days of use (IQR 1–5); methamphetamine users ($n=67$) reported two median days of use (IQR 1–4); and GHB users ($n=20$) reported 1.5 median days of use (IQR 1.00–3.75).

Table 3 shows gender and sexual orientation differences in the number of days of recent drug use. There were no gender or sexual orientation differences in days of ketamine, GHB, methamphetamine, or cocaine use. In contrast, gay and bisexual men reported the fewest median days of recent MDMA/ecstasy use (median = 1.5), compared with heterosexual men (median = 4.0), lesbian and bisexual women (median = 3.0), and heterosexual women (median = 2.0). Furthermore, heterosexual men reported the greatest median days of recent LSD/acid use (median = 5.0), compared with gay and bisexual men (median = 1.0), lesbian and bisexual women (median = 1.5), and heterosexual women (median = 3.5). Finally, there were no age differences in recent use for any of the six club drugs. Because there were no significant differences, the data are not reported in a table.

Dependence on club drugs

In total, 235 (58.8%) participants met the CIDI criteria for dependence on club drugs (i.e., they answered “yes” to three or more items on the scale). Most participants who met the dependence criteria indicated that cocaine ($n=145$, 61.7%) was causing them the most problems,

Table 2. Gender and sexual orientation differences in lifetime and recent club drug use (n=400)

| <i>Lifetime drug use</i> | MDMA/ecstasy (n=351) Percent | Ketamine (n=206) Percent | GHB (n=86) Percent | Methamphetamine (n=169) Percent | Cocaine (n=378) Percent | LSD/acid (n=237) Percent |
|--|------------------------------------|--------------------------------|--------------------------------------|---------------------------------------|-------------------------------------|--------------------------------|
| Male (n=200) | 91.0 | 55.0 | 28.5 | 46.5 | 93.0 | 60.5 |
| Female (n=200) | 85.0 | 48.0 | 14.6 | 38.0 | 96.0 | 58.0 |
| Significance, χ^2 | NS | NS | ^a | NS | NS | NS |
| OR (95% CI) | | | 2.34 (1.42, 3.85) | | | |
| Heterosexual (n=200) | 87.0 | 51.5 | 19.6 | 32.5 | 93.0 | 61.0 |
| Gay/lesbian/bisexual (n=200) | 88.9 | 51.5 | 23.5 | 52.0 | 96.0 | 57.5 |
| Significance, χ^2 | NS | NS | NS | ^a | NS | NS |
| OR (95% CI) | | | | 2.25 (1.50, 3.38) | | |
| (A) Lesbian and bisexual women (n=100) | 88.0 | 46.0 | 13.0 | 45.0 | 96.0 | 65.0 |
| (B) Heterosexual women (n=100) | 82.0 | 50.0 | 16.0 | 31.0 | 96.0 | 51.0 |
| (C) Gay and bisexual men (n=100) | 89.0 | 57.0 | 34.0 | 59.0 | 96.0 | 50.0 |
| (D) Heterosexual men (n=100) | 92.0 | 53.0 | 23.0 | 34.0 | 90.0 | 71.0 |
| Significance, χ^2 (3) | NS | NS | ^a | ^a | NS | ^b |
| Fisher's exact test $p < 0.01$, differences | | | C > A,B | | C > B,D | |
| | | | | | | D > B,C |
| <i>Recent drug use (past four months)</i> | MDMA/ecstasy (n=214) Percent | Ketamine (n=80) Percent | GHB (n=20) Percent | Methamphetamine (n=67) Percent | Cocaine (n=361) Percent | LSD/acid (n=78) Percent |
| Male (n=200) | 55.8 | 23.6 | 8.5 | 21.1 | 88.9 | 24.0 |
| Female (n=200) | 51.5 | 16.5 | 1.5 | 12.5 | 92.0 | 15.0 |
| Significance, χ^2 | NS | NS | ^a | ^c | NS | NS |
| OR (95% CI) | | | 6.13 (1.77, 21.20) 1.87 (1.09, 3.21) | | | |
| Heterosexual (n=200) | 57.3 | 23.1 | 4.0 | 15.1 | 87.4 | 12.5 |
| Gay/lesbian/bisexual (n=200) | 50.0 | 17.0 | 6.0 | 18.5 | 93.5 | 7.0 |
| Significance, χ^2 | NS | NS | NS | NS | ^c | ^b |
| OR (95% CI) | | | | | 2.07 (1.03, 4.17) 2.05 (1.22, 3.42) | |
| (A) Lesbian and bisexual women (n=100) | 52.0 | 14.0 | 3.0 | 13.0 | 94.0 | 18.0 |
| (B) Heterosexual women (n=100) | 51.0 | 19.0 | 0.0 | 12.0 | 90.0 | 12.0 |
| (C) Gay and bisexual men (n=100) | 48.0 | 20.0 | 9.0 | 24.0 | 93.0 | 10.0 |
| (D) Heterosexual men (n=100) | 63.0 | 27.0 | 8.0 | 18.0 | 84.0 | 38.0 |
| Significance, χ^2 (3) | NS | NS | NS | NS | NS | ^a |
| Fisher's exact test $p < 0.01$, differences | | | B < D,C | | D > C,B,A | |

^a $p < 0.001$ ^b $p < 0.01$ ^c $p < 0.05$

MDMA = methylenedioxyamphetamine

GHB = gamma-hydroxybutyrate

LSD = d-lysergic acid diethylamide

NS = not significant

OR = odds ratio

CI = confidence interval

Table 3. Gender and sexual orientation differences in days of recent drug use (past four months)^a

| Drug | Lesbian and bisexual women | | | Heterosexual women | | | Gay and bisexual men | | | Heterosexual men | | | Kruskal-Wallis χ^2 (3) |
|-----------------|----------------------------|-------------|-----------|--------------------|-------------|----------|----------------------|-------------|----------|------------------|-------------|----------|-----------------------------|
| | N | Median days | IQR | N | Median days | IQR | N | Median days | IQR | N | Median days | IQR | |
| MDMA/ecstasy | 52 | 3.0 | 1.0-6.0 | 51 | 2.0 | 1.0-5.0 | 48 | 1.5 | 1.0-3.8 | 63 | 4.0 | 1.0-8.0 | 11.53 ^b |
| Ketamine | 14 | 2.0 | 1.0-3.3 | 19 | 3.0 | 1.0-6.0 | 20 | 2.0 | 1.0-3.0 | 27 | 3.0 | 1.0-8.0 | 4.78 |
| GHB | 3 | 2.0 | 2.0-120.0 | 0 | NA | NA | 9 | 1.0 | 1.0-7.5 | 8 | 1.0 | 1.0-2.0 | 3.15 |
| Methamphetamine | 13 | 2.0 | 2.0-6.0 | 12 | 2.0 | 1.0-3.0 | 24 | 2.0 | 1.0-9.0 | 18 | 3.0 | 2.0-4.0 | 2.53 |
| Cocaine | 94 | 9.5 | 3.0-20.0 | 90 | 10.0 | 4.0-20.0 | 93 | 9.0 | 4.0-25.0 | 84 | 10.0 | 3.3-20.0 | 0.78 |
| LSD/acid | 18 | 1.5 | 1.0-4.3 | 12 | 3.5 | 1.0-10.0 | 10 | 1.0 | 1.0-1.3 | 38 | 5.0 | 1.0-10.0 | 13.17 ^b |

^aData are nested among participants having used drugs in the last 90 days.

^b $p < 0.001$

IQR = interquartile range

MDMA = methylenedioxymethamphetamine

GHB = gamma-hydroxybutyrate

NA = not applicable

LSD = d-lysergic acid diethylamide

followed by MDMA/ecstasy ($n=41$, 17.4%), methamphetamine ($n=25$, 10.6%), LSD/acid ($n=13$, 5.5%), ketamine ($n=8$, 3.4%), and GHB ($n=2$, 0.9%). One participant did not provide a response.

There were no age, racial/ethnic, gender, or sexual orientation differences in club drug dependence, in that none of these demographic characteristics was related to the drug dependence total score (i.e., continuous; range 0–8) or to whether participants met the criteria for dependence (i.e., dichotomous). Furthermore, age, race/ethnicity, gender, and sexual orientation were not related to the three most commonly identified drugs that were causing dependence problems (i.e., cocaine, methamphetamine, and MDMA/ecstasy). Because so few participants indicated that LSD/acid, ketamine, or GHB were causing them dependence problems, statistical power was insufficient for further analyses.

Finally, to better explore the association between days of drug use and drug dependence, we compared median days of drug use by drug dependence. Among recent cocaine users ($n=361$), 144 participants indicated cocaine was causing drug dependence problems. These participants averaged 15 median days of cocaine use in the last four months (IQR 6–25), compared with only seven median days of cocaine use (IQR 3–20) among those participants who did not feel cocaine was causing drug dependence problems (Kruskal-Wallis $\chi^2 [1] = 24.4$, $p < 0.001$). Among recent methamphetamine users ($n=67$), days of methamphetamine use were not related to drug dependence. Finally, among recent MDMA/ecstasy users ($n=214$), days of use were marginally related ($p < 0.10$) to drug dependence problems. MDMA/ecstasy users who indicated that MDMA/ecstasy was causing dependence problems reported five median days of recent use (IQR 1.0–6.5), compared with two median days of use (IQR 1–5) for MDMA/ecstasy users who did not indicate MDMA/ecstasy was causing dependence problems (Kruskal-Wallis $\chi^2 [1] = 3.41$, $p < 0.10$).

DISCUSSION

Researchers have identified increases in club drug use and linked use specifically to young adults^{5,34} and club culture.⁴ Yet much of our knowledge about trends in club drug use has been limited to convenience-based samples (limiting generalizability) or national surveys (which are often devoid of the cultural characteristics inherent to club drug use). Although increasing attention has been given to club drug use among gays, lesbians, and bisexuals in and of themselves,^{23–26,28} little research has been done that systematically assesses

gender and sexual orientation differences in club drug use and dependence.

Addressing this limitation, and using the probability-based sampling method, a stratified sample of 400 club drug-using young adults provided extensive data on their drug use and dependence. Though in our research design we anticipated a full range of drug users, and most participants used multiple drugs, we found an extremely high prevalence of cocaine use, with nine out of 10 participants reporting recent cocaine use. These findings indicate that cocaine is a major drug of choice in NYC club cultures.

Based on prior research,^{17,18,23–26,28,45} we hypothesized a gender and sexual orientation interaction in club drug use patterns; however, this hypothesis was not well supported. These data indicated that gay and bisexual men were more likely to have ever used both methamphetamine and GHB. Meanwhile, the prevalence of recent use across gender and sexual orientation was mixed, as there were no differences in MDMA/ecstasy, methamphetamine, or cocaine use. In contrast, gay and bisexual men were the most likely to report recent GHB use, and heterosexual men were the most likely to report recent LSD/acid use. LSD/acid use was also significantly related to age, income, and status as a student, indicating younger adults were significantly more likely to be actively using LSD/acid. The psychedelic experience of using LSD/acid may be particularly attractive to those younger adults seeking self-discovery and exploration.^{34–36,46}

Although there were some gender and sexual orientation differences in recent drug use, there were fewer age, income, or racial/ethnic differences. In contrast with a national sample of young adults in which significant gender differences in club drug use were found,^{9,10} these data suggested that among active club drug users, there was little across-group variation in the use of club drugs. In essence, these drugs may have permeated club cultures. Furthermore, in terms of patterns of recent drug use (measured in the number of days drugs were used), we were surprised to find few sociodemographic differences. With the exception of LSD/acid and MDMA/ecstasy, patterns of recent use did not vary across sexual orientation. Meanwhile, with the exception of methamphetamine, Caucasian participants were no more or less likely than non-Caucasian participants to have recently used any of the club drugs assessed. Unfortunately, statistical power was limited for some nonwhite groups (e.g., African American and Asian participants), and we were unable to distill race/ethnicity into separate categories, thus limiting our ability to further disentangle this finding. Needless to say, these data highlight the need

to develop culturally specific health education and prevention initiatives that are capable of tapping into different facets of club cultures (be it gender, sexual orientation, or age).

Finally, a majority of those participants having met or exceeded CIDI club drug dependence criteria indicated that cocaine was the one drug causing them the most problems. These data suggest not only that cocaine is the drug of choice among club drug users, but it is also the single club drug causing the most significant problems in the lives of club drug-using young adults. Furthermore, frequency of recent cocaine use, and developing problems as a result of cocaine use, occurred independent of age, gender, and sexual orientation. Due to this unique association between cocaine use and cocaine dependence, these data not only highlight the need for targeted health education and prevention programs, but also indicate a need for treatment.

CONCLUSIONS

These findings speak to drug and health researchers as well as community service providers, and have implications for health policy. Further, because we used a probability-based sampling method to gather this sample of young adults, the data and results described in this article may serve as a benchmark for those seeking to understand gender, age, and sexual orientation differences in the patterns and prevalence of club drug use. In terms of policy, these data indicate it may be necessary to monitor trends in cocaine use among club-going young adults. This monitoring may include investigating the social motivations underlying cocaine use, as well as exploring how both individual-level characteristics (e.g., personality type) and group-level characteristics (e.g., class, race/ethnicity, and gender) interact with such motivations. Further, because cocaine was most often identified as the one drug causing significant dependence-like problems, these data highlight the immediacy with which drug education and treatment should be made available to club-going, drug-using young adults. Finally, with such high rates of club drug use identified, it is vital to monitor the immediate and long-term physical health consequences of frequent club drug use.

In an effort to develop an in-depth understanding of club drug use among urban young adults, all data were gathered from participants recruited using time-space sampling, and thus we believe our sample is representative of NYC club-going, club drug-using young adults. In so doing, these analyses have painted a comprehensive picture of drug use among this population, but these

results may not be generalizable to other populations. Nightclubs and bars are visible venues 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 preventive initiatives with target populations of interest.

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