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Planned and Unplanned Drug Use During A Night Out at an Electronic Dance Music Party

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Abstract

Background: Electronic dance music (EDM) parties at nightclubs and festivals are high-risk scenes for drug use. Although intention to use drugs (such as ecstasy) has been shown to be the most proximal determinant of use, little is known regarding the extent to which drug use is unplanned in this high-risk scene.

Methods: We surveyed 954 adults entering EDM parties in New York City in 2017 and asked about planned drug use that night. A quarter (n=236) completed the optional online follow-up survey which asked about drug use during their outing. We examined prevalence and correlates of planned and unplanned use.

Results: A fifth (21.0%) of attendees reported planning to use a specific drug the night of the party and over a third (35.4%) reported using a drug later that night. A quarter (26.6%) used in an unplanned manner. Unplanned marijuana use was most common (10.7%), followed by unplanned use of ecstasy (7.3%), cocaine (4.7%), amphetamine (1.4%), LSD (1.3%), and MDA (1.1%). Unplanned initiation of ecstasy and PMA also occurred. Unplanned drug use was more likely to occur among those recruited outside of nightclubs compared to festivals. Non-heterosexual participants and those with a college degree or higher were also more likely to engage in unplanned marijuana use compared to heterosexual and less educated participants, respectively.

Conclusions: Unplanned drug use is common at EDM parties. Results can inform prevention and harm reduction in these scenes as unplanned use may exacerbate potential adverse outcomes related to drug use and often extreme party environments.

Keywords

ecstasy; nightlife; planned behavior

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Introduction

Electronic dance music (EDM) party attendees are at high risk for drug use and associated adverse outcomes (Hughes, Moxham-Hall, Ritter, Weatherburn, & MacCoun, 2017; Palamar, Barratt, Ferris, & Winstock, 2016; Palamar, Griffin-Tomas, & Ompad, 2015). A nationally representative survey of high school seniors in the US found that those who have attended EDM rave parties were more likely to use 18 different illegal drugs, and more frequently, than non-attendees (Palamar, Griffin-Tomas, et al., 2015). A recent national survey of dance festival-attending adults in Australia also found that four-fifths (78%) of adults sampled used an illegal drug at their last dance festival with 85% of these individuals using ecstasy (Hughes et al., 2017). Drug use is common across nightlife party settings (Miller et al., 2015); however, the type(s) of drug used tend to vary depending on the setting. For example, while alcohol use is most common in bar settings, use of certain drugs such as ecstasy is more associated with EDM parties (Van Havere, Vanderplasschen, Lammertyn, Broekaert, & Bellis, 2011). Drugs such as ecstasy are strongly associated with EDM parties as drug effects often enhance attendees' experiences with large crowds, loud electronic music, and laser light shows (Collin, 2009; Michael White, 2014). Poisonings and deaths at dance festivals commonly occur (Lund & Turris, 2015; Ridpath et al., 2014), due to a combination of drug use and often extreme environmental factors such as high temperature, dehydration, continuous physical exertion from dancing (Parrott, 2012). Since these parties tend to be high-risk scenes, more research is needed to determine the extent to which drug use is unplanned, as planned use can at least better allow users to prepare and utilize harm reduction strategies (Davis & Rosenberg, 2016).

The Theory of Reasoned Action (Ajzen, 1985) posits that intention to engage in a behavior is the most proximal determinant of behavior, and this has been shown in prospective studies, with intention to use ecstasy predicting future use (Orbell, Blair, Sherlock, & Conner, 2001; Umeh & Patel, 2004; Vervaeke, Benschop, van den Brink, & Korf, 2008). However, studies examining intention to use ecstasy have largely examined intention to use over the next two months (Orbell et al., 2001; Umeh & Patel, 2004).

Of the few prospective studies that have examined intention to use ecstasy in relation to later use, one study focused on intention to use as a predictor of ecstasy initiation among 160 non-lifetime using adults (who were deemed "likely" to initiate ecstasy), over a 11–26 month period (Vervaeke et al., 2008). Four out of ten (41%) reported ecstasy use initiation during the follow-up period, and of these initiates, 94% reported intention to use during the first assessment. In a more recent study, 232 gay/bisexual men were surveyed entering dance parties and completed follow-up when leaving the event or online within two weeks after the event (Ramchand, Fisher, Griffin, Becker, & Iguchi, 2013). They were asked their intention to use drugs that weekend via a checklist and were later asked which drugs they used that weekend. The majority of drug use was planned, but unplanned use of drugs such as cocaine (12.9%), ecstasy (11.9%), ketamine (8.1%), marijuana (6.0%), and/or methamphetamine (2.8%) was relatively common. However, a limitation of this important study is that it did not appear to consider that many individuals might have used drugs prior to taking the initial survey, which can limit interpretation of intention to use predicting later use.

Additional research examining how intention to use a drug predicts drug use is needed within the EDM scene. Aside from common health risks associated with use of various drugs in general, many EDM parties, particularly large dance festivals, contain environmental risk factors for attendees high on drugs such as ecstasy. For example, ecstasy users dancing for hours in the heat, in large crowds, without adequate rest or hydration, can increase risk for users experiencing adverse outcomes (Parrott, 2012). When an individual does decide to use a drug, planning may help reduce chances of harm or severity of harm. Ecstasy users, for example, commonly "preload" with vitamins, electrolytes, juice, and/or 5-hydroxytryptophan (5-HTP) supplements (Davis & Rosenberg, 2016; Umeh & Patel, 2004). Sleep or rest, eating, avoiding alcohol, and hydration before a night out may leave users less susceptible to drug and/or environment-related adverse outcomes (Murphy, Wareing, & Fisk, 2006). Many users of drugs such as ecstasy also prefer to test their drugs before going to a party to ensure the drug they plan to use is not adulterated (Barratt, Bruno, Ezard, & Ritter, 2017). Thus, using drugs in an unplanned manner at a party may leave users more likely to experience drug-related risk.

In this study, we queried intention to use drugs upon entering EDM parties and during a follow-up survey we queried which drugs attendees used the night of the party. We examined this to determine the extent of unplanned use, as well as predictors of both use that was planned and unplanned. Attendees were surveyed outside of both nightclubs and festivals which provided the opportunity to compare planned and unplanned use according to venue type. Results of this study can help inform prevention and harm reduction in this high-risk scene.

Methods

Participants and procedure

We utilized time-space sampling (MacKellar et al., 2007) to recruit participants. Specifically, each week, a list of upcoming EDM parties was created. Parties at nightclubs were randomly selected each week. Recruiters typically surveyed participants within 2–3 hour time slots (e.g., between 11:30pm and 2:30am) on 1–2 nights per week (on Thursday through Sunday). We also conducted surveys outside of two large festivals which were not formally randomly selected as a main objective of this study was to compare drug use at festivals and nightclubs. Recruitment outside of the two festivals was conducted during early afternoon (typically between 12:30pm and 4:00pm). Recruitment was conducted in early afternoon because unlike nightclub parties in NYC (most of which currently close between 4:00am and 6:00am), festivals in NYC end before midnight. One festival was three days (Friday through Sunday) and the other was two days (Saturday and Sunday).

Individuals were eligible if they were ages 18–40 and about to enter the randomly selected party. Recruiters approached passersby (who were alone or in groups), and if confirmed eligible, were asked if they would be willing to take a survey about drug use. Recruiters confirmed that participants were not visibly inebriated. Surveys were conducted on tablets after interested individuals provided informed consent. Those completing the survey were compensated $10 USD. 954 participants were surveyed from June through September of 2017, and the response rate was 74%.

Upon completing the survey, participants were asked if they were interested in participating in an optional follow-up survey which would be emailed to them 1–2 days later. To participate in the follow-up, participants provided their email addresses. Emails were typically sent the day after the in-person survey was conducted and no more than three reminder emails were sent. Participants who responded were asked to enter their identification number (provided in email) to allow us to link their follow-up data to their in-person data. Those completing the follow-up were compensated with an additional $20 USD electronic gift card from a choice of four popular vendors (e.g., Amazon). To protect confidentiality, the survey did not collect identifying information; upon completing the survey, participants clicked a link to take him or her to a separate survey in which he or she re-entered his or her study identification number and email address to choose a gift certificate vendor. This study was approved by the institutional review board at New York University Langone Medical Center.

Sociodemographic characteristics

Both the in-person and follow-up survey queried age, gender, and race/ethnicity. The in-person survey also queried education, sexual orientation, and level of EDM nightclub/ festival/ rave/party attendance in the past year. It was also recorded whether the participant was surveyed outside of a nightclub or a festival.

Drug use

Participants were asked about past-year use of a number of illegal drugs on the initial survey. They were then asked, “Did you use any drugs today/tonight?” and they were also asked, “Do you INTEND to use any drugs today/tonight?” Those answering “yes” were asked to type in which drug(s) they used and/or intended to use.

Near the beginning of the follow-up survey, participants were asked to think about the night they took the initial survey (entering the party). They were then asked, “Did you use any drugs that day/night?” Similar to the in-person survey, those answering “yes” were asked to type in which drug(s) they used. Those who reported using a drug were also asked, “Did you use this drug (or any of these drugs) for the first time ever that day/night?” Those answering “yes” were asked to type in the name of the drug(s) they used for the first time that night.

We provided an open-response text box instead of a checklist of various drugs to limit potential overreporting. While open-response items have been shown to lead to underreporting of previously used drugs on national surveys (likely do to limitations involving recall) (Palamar, Martins, Su, & Ompad, 2015), we aimed to query intention to use specific drugs without providing a list to indicate which drug(s) they intended use. We did this to prevent individuals from interpreting us as asking about willingness to accept specific drugs given the opportunity. Thus, we interpret self-reported intention to use that night as “planned” use.

Type-in responses were double-coded by two authors to ensure that responses accurately reflected the drugs we believe the participants reported using and/or intended to use. For example, Molly, ecstasy, and MDMA were coded to reflect ecstasy. Iterations continued until 100% agreement was reached between the two raters. For each question, we recoded

variables indicating use and intention to use specific drugs. To ensure temporality of associations regarding plans to use and retrospective accounts of drugs used the night of the survey, we also created a set of drug use indicator variables selecting-out those reporting use of specific drugs on the day of the survey (before taking it) for analyses examining unplanned use.

Follow-up

Of the 933 participants who completed the initial survey in person, 43.0% (n=401) provided an email address to be contacted for the follow-up survey. Of these, 63.1% (n=246) completed the follow-up survey (26.4% of the full sample). To further ensure that the same participant took both surveys, after linking identification numbers assigned the night of the in-person survey to the follow-up survey, we ensured that key demographics (i.e., gender, race/ethnicity, age) matched. We removed 4 cases with mismatching demographic data. Similar to a previous nightlife study also utilizing follow-up regarding the night of the initial survey (Ramchand et al., 2013), we also only focused on follow-up surveys completed within 14 days after the initial survey. Thus, we removed an additional 6 participants who submitted follow-up data 15–29 days later. The final analytic sample for these analyses thus contained 236 participants.

Analyses

We first examined descriptive statistics and compared demographic and drug use characteristics between the full sample who took the initial survey and those who took the follow-up survey. The rest of the analyses were limited to the follow-up sample. We estimated prevalence of self-reported intention to use during the initial survey and self-reported use that occurred the night of the initial survey as reported on the follow-up survey. Prevalence of intention to use was estimated excluding those who reported any use during the day before taking the initial survey. We then compared self-reported use (of any drug and of each drug individually) according to whether use was planned or unplanned. Chi-square was used to compare groups with adequate sample size.

We then examined whether demographic characteristics and past-year use of marijuana and ecstasy differed according to 1) no use the night of survey, 2) planned use (among those who used) the night of the survey; and 3) unplanned use the night of the survey. This was done for 1) use of any illegal drugs the night of survey, 2) use of ecstasy the night of the survey, and 3) use of marijuana the night of the survey. Focus was limited to these three categories as these were the most prevalent. Past-year marijuana and ecstasy use were chosen as drug use-related independent variables as we believe these are most consistent with analyses as marijuana and ecstasy use the night of the survey were dependent variables. We limited these analyses to bivariable comparisons using chi-square as many cell sizes were too small to enable us to fit multivariable models with adequate precision.

We created sample weights to account for the complex survey design. Weights incorporated frequency of self-reported party attendance and response rates each night of recruitment. Each participant’s selection probability was computed and estimates were weighted by the inverse of that probability (Gustafson et al., 2013; Jenness et al., 2011; Karon & Wejnert,

2012; MacKellar et al., 2007). Weights were utilized in all analyses and Taylor series estimation was used to obtain accurate standard errors (Heeringa, West, & Berglund, 2010) with randomly selected party specified as the primary sampling unit. Data were analyzed using Stata 13 SE (StataCorp, 2013).

Results

Sample characteristics are presented in Table 1. Compared to males, females were more likely to take the follow-up survey ($p<.001$). There was no differential attrition by other key demographics or drug use variables. The majority of participants were white, college educated, and heterosexual. Past-year drug use was prevalent with more than half the sample reporting past-year marijuana use, and about a quarter reporting past-year use of ecstasy and/or powder cocaine. The average number of days until follow-up was 3.6 (SE=0.4) and most (85%) completed it within seven days post-in-person-survey.

As shown in Table 2, among those not reporting any drug use during the day prior to the initial survey, a fifth (21.0%) reported planning to use at least one illegal drug that night. Over a quarter (26.6%) later reported unplanned use that night. 14.8% reported intention to use an illegal drug other than marijuana and 17.9% later reported unplanned use. Regarding unplanned use of specific drugs, 10.7% reported unplanned use of marijuana, and unplanned use of ecstasy (7.3%), cocaine (4.7%), amphetamine (1.4%), LSD (1.3%), MDA (1.1%), PMA (0.4%), and mushrooms (0.4%) also occurred. It should be noted that regarding drug initiation the night of the survey, two participants reported initiating ecstasy and one reported initiating PMA. One ecstasy-initiator reported intending to use that night, but neither the ecstasy nor the PMA initiator reported intent to use that night.

Table 3 presents comparisons regarding planned and unplanned use of 1) any illegal drug, 2) ecstasy, and 3) marijuana. With regard to any illegal drug use the night of the survey, planned use were more likely to take place at festivals with nearly a quarter (24.0%) of use being planned (vs. 6.5% at nightclubs), and unplanned use was more likely to take place at nightclubs with over a quarter (27.5%) of use being unplanned (vs. 13.1% at festivals) ($p=.004$). Past-year ecstasy users were more likely to use a drug, and a third (33.7%) engaged in planned use (compared to 9.0% of non-past-year users) and 37.1% engaging in unplanned use (compared to 16.5% of non-past-year users) ($p<.001$).

With regard to ecstasy use (Table 3), males were more likely to use this drug the night of the survey and they were more likely to engage in both planned (16.4% vs. 2.5%) and unplanned use (8.5% vs. 5.4%) than females ($p=.030$). Planned ecstasy use was more likely to take place at festivals with 13.9% of use being planned (vs. 2.1% planned use at nightclubs), and unplanned use was more likely to take place at nightclubs with 8.5% of use being unplanned (vs. 4.0% of unplanned use at festivals) ($p=.020$). Past-year ecstasy users were more likely to use ecstasy during their night out, and 19.0% engaged in planned use (compared to 4.5% of non-past-year users) and 13.5% engaging in unplanned use (compared to 4.7% of non-past-year users) ($p=.017$).

With regard to marijuana use (Table 3), younger participants were more likely to use, and 6.9% of younger participants used in an unplanned manner (compared to 1.3% of older participants) and 15.1% of younger participants used in an unplanned manner (compared to 5.7% of older participants) (p=.015). Those with less than a college degree were more likely to use marijuana during their night out in a planned manner (7.1%, compared to 1.3% among those with a college degree), and those with a college degree were more likely to use marijuana in an unplanned manner (13.8%, compared to 4.9% without a college degree) (p=.009). Non-heterosexual participants were more likely to use marijuana during their night out and they were more likely to use in an unplanned manner than heterosexual participants (20.1% vs. 6.2%) (p=.043). Finally, past-year ecstasy users were more likely to use marijuana during the night of the survey, and 7.1% engaged in planned use (compared to 2.9% of non-past-year users) and over a fifth (22.8%) engaged in unplanned use (compared to 6.3% of non-past-year users) (p=.017).

Discussion

EDM parties tend to be high-risk environments, and more research was needed to help determine the extent to which drug use is unplanned in such settings, as planned use can at least better allow users to prepare and utilize harm reduction strategies (Davis & Rosenberg, 2016).

A fifth of attendees reported planning to use a specific drug the night of the party and over a third reported using a drug later that night; however, a quarter of these attendees used in an unplanned manner. One out of ten participants who used marijuana used in an unplanned manner, and participants reported using drugs such as ecstasy, cocaine, amphetamine, LSD, MDA, and PMA in an unplanned manner. While unplanned use of various drugs among participants was common, past-year use was a strong predictor of both planned and unplanned use. For example, nine out of ten who used ecstasy reported using in the past year beforehand. While most use occurred among recent (past-year) users, some non-recent users engaged in use and there were also three reported drug initiations the night of the survey. One initiator engaged in planned use of ecstasy, and unplanned use of ecstasy and PMA also occurred the night of the survey. Unplanned PMA use is particularly alarming as PMA is a highly-potent drug which is typically avoided by ecstasy users (Day et al., 2018) as deaths related to use have been covered in the media (Nutt, 2015). The situations in which attendees initiated these drugs is unknown, but results suggest the need to educate populations who attend EDM parties not only about common drugs such as ecstasy, but also less common drugs such as MDA and PMA.

Another main finding was that individuals recruited outside of festivals were more likely to engage in planned drug use and those recruited outside of nightclubs were more likely to engage in unplanned use. Festivals are large annual events attended by tens or hundreds of thousands of individuals in a single weekend, and it appears that drug use is more commonly incorporated into plans for such events. Expectations to use drugs at festivals may also be associated with use, similar to how alcohol consumption is commonly expected or planned for holidays such as St. Patrick’s Day (Henslee, Irons, & Bonn-Miller, 2016). Parties at nightclubs, however, are more frequent, and unplanned use or other impulsive behavior may

be more common on less-planned local nights out. Harm reduction and prevention efforts thus need to consider party context when providing those at risk for drug use with education that may inform drug-related decision-making.

Almost a fifth of participants engaged in unplanned use of a drug other than marijuana, such as ecstasy and cocaine, and these drugs are typically riskier than marijuana with regard to health outcomes (Nutt, King, Saulsbury, & Blakemore, 2007). However, both planned and unplanned marijuana use was prevalent, and marijuana use can place users at legal risk when used at such venues, depending on the legal status of marijuana possession in the city or state where the party is held. When marijuana is smoked it tends to emit an odor which can easily be detected by authorities; so in some respects, in some areas, marijuana use can be riskier, legally, than other drugs at such parties, where use can be more easily hidden. However, a limitation is that we lacked data regarding whether the marijuana was smoked, vaped, or ingested. Even though penalties for marijuana possession tend to be less severe than most other illegal drugs, getting caught possessing or using this drug can still lead to legal penalties (depending on where the party is held) and/or ejection from the party. More research on marijuana use at EDM parties is certainly warranted. Marijuana use has also been found to be associated with increased probability of using other drugs (Morral, McCaffrey, & Paddock, 2002; Palamar, Griffin-Tomas, & Kamboukos, 2015; Vanyukov et al., 2012) so more research is needed to determine whether using in EDM party settings increases risk of initiating other drugs.

Non-heterosexual participants and those with a college degree or higher were more likely to engage in unplanned marijuana use at a party compared to heterosexual and less educated participants, respectively. Younger participants were also more likely to use marijuana in either a planned or unplanned manner, and males were more likely to use illegal drugs overall in a planned or unplanned manner. Individuals with these characteristics have often been found to be at high risk for drug use, but this study adds that use among such individuals may be often unplanned. These factors should be considered in prevention and harm reduction programming.

Limitations

Results may not be generalizable beyond the EDM scene. A random sample was not feasible to survey this population, but time-space sampling was utilized which allowed us to utilize some elements of random selection and our estimates were weighted to account for differential selection probability. Submitting an email address and participating in the follow-up survey were optional. While only a quarter of the full sample was assessed via follow-up survey, 61.3% of those providing an email took the follow-up survey. While retention rates were modest, females were more likely to complete the follow-up survey than males, which may have biased results. Underreporting of drugs used or planned to be used is also a possibility due to confidentiality concerns and it is possible that underreporting occurred as the type-in method was utilized. Finally, we selected-out participants from some analyses who reported using drugs before taking the initial survey because we could not deduce whether reported use during the follow-up referred specifically to use after the initial

survey or before it. It is also possible that drugs were used after leaving the party rather than at the party.

Conclusions

This study determined that unplanned drug use is common at EDM parties. While any drug use can be risky, we believe unplanned use may further exacerbate potential adverse outcomes related to drug use and often extreme party environments. More research is needed to further investigate the contexts of unplanned use (e.g., drug offers), but results can inform prevention and harm reduction in these scenes. Targeted educational messages towards at-risk party attendees appear to be needed. Harm reduction tends to focus more on how to reduce or prevent harm during planned drug use, but results of this study suggest additional focus is needed to prepare such party attendees to be aware that desire to use or try a drug may increase in such atmospheres where drugs may be highly available (e.g., from offers from friends or dealers). Thus, attendees of these high-risk environments can learn to better prepare to reject drug offers and/or to be prepared (e.g., hydrated, well rested, not inebriated on other drugs such as alcohol) in cases in which they in fact decide to use a drug in an unplanned manner.

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Table 1 –

Sample characteristics.

	In-Person Survey (N=933)		Follow-up Survey (N=236)		
	N	Weighted %	N	Weighted %	P±
Age, Mean (SE)	25.4	(SE=0.4)	25.3	(SE=0.4)	.918
Sex					<.001
Male	480	51.6	86	35.8	
Female	453	48.4	150	64.2	
Race/Ethnicity					.214
White	525	52.4	145	52.5	
Black	72	7.5	18	6.9	
Hispanic	169	19.9	37	22.5	
Asian	108	13.7	18	8.1	
Other/Mixed	59	6.5	18	9.9	
Education					.320
High School or Less	120	16.3	20	11.6	
Some College	261	27.4	81	32.9	
College Degree	419	45.5	45	45.0	
Graduate School	133	10.8	25	23.3	
Sexual Orientation					.051
Heterosexual	756	83.5	176	74.9	
Gay/Lesbian	66	5.5	24	7.9	
Bisexual	94	9.3	27	13.9	
Other Sexuality	17	1.8	9	3.4	
Venue Type Where Recruited					.743
Nightclub	656	56.1	155	54.9	
Festival	277	43.9	81	45.1	
Past-Year Drug Use					
Marijuana	602	56.9	168	63.8	.124
Ecstasy	347	24.9	90	21.7	.248
Powder Cocaine	330	25.3	85	23.4	.613
LSD	238	14.8	77	18.8	.197
Drugs Planned to Use That Night					
Marijuana	83	8.3	31	10.7	.145
Ecstasy	83	9.1	31	12.3	.250
Powder Cocaine	47	4.3	13	4.5	.886
LSD	20	1.3	8	1.4	.867

± P refers to comparisons between those who completed the follow-up survey and those who did not complete the follow-up survey.

Table 2 –

Self-reported drug use during participants' night out according to planned versus unplanned use.

	Planned to Use that Night	Actual Use Among Those With and Without Planned Use		
	Weighted % (n)	Unplanned Use Weighted % (n)	Planned Use Weighted % (n)	*P*
Any illegal drug	21.0 (46)	26.6 (61)	68.7 (41)	.0025
Illegal drug other than marijuana	14.8 (36)	17.9 (39)	62.7 (27)	.0005
Ecstasy	10.7 (25)	7.3 (14)	69.1 (19)	<.0001
Marijuana	7.3 (14)	10.7 (21)	51.7 (11)	.0297
Cocaine	3.2 (8)	4.7 (8)	13.2 (1)	.4040
LSD	1.0 (4)	1.3 (4)	100.0 (4)	<.0001
Amphetamine	0.5 (1)	1.4 (1)	0.0 (0)	--
Ketamine	0.5 (1)	0.0 (1)	0.0 (0)	--
Methamphetamine	0.4 (1)	0.0 (0)	0.0 (1)	--
MDA	0.0 (0)	1.1 (2)	0.0 (0)	--
PMA	0.0 (0)	0.4 (1)	0.0 (0)	--
Mushrooms	0.0 (0)	0.4 (1)	0.0 (0)	--

Note. Numbers in each cell of the table are percentages and counts in parentheses. Due to survey weighting, the percentages and counts do not exactly line up (e.g., 41 of 46 is 89%, not 69%). Chi-square tests compared self-reported use that night between those with and without a plan to use that night. "—" indicates that *P* could not be computed due to too few cases in at least one cell. LSD = lysergic acid diethylamide; MDA = 3,4-methylenedioxyamphetamine; PMA = paramethoxyamphetamine

Table 3 –

Covariates associated with planned and unplanned use of any illegal drugs the night of the survey.

	Any Illegal Drug Use			Ecstasy Use			Marijuana Use		
	No Use (64.6%) Weighted %	Planned Use (14.4%) Weighted %	Unplanned Use (21.0%) Weighted %	No Use (86.1%) Weighted %	Planned Use (7.4%) Weighted %	Unplanned Use (6.5%) Weighted %	No Use (86.3%) Weighted %	Planned Use (3.8%) Weighted %	Unplanned Use (9.9%) Weighted %
Age									
18–24	62.3	16.1	21.6	86.3	7.4	6.3	78.0*	6.9	15.1
25–40	66.5	13.0	20.5	85.9	7.5	6.6	93.0	1.3	5.7
Sex									
Male	51.5	23.1	25.4	75.1*	16.4	8.5	86.9	4.0	9.1
Female	71.9	9.6	18.6	92.1	2.5	5.4	86.0	3.7	10.3
Race/Ethnicity									
Non-White	71.2	12.4	16.3	86.4	8.5	5.1	89.8	0.8	9.4
White	58.6	16.2	25.3	85.8	6.5	7.7	83.2	6.4	10.4
Education									
< College degree	64.9	16.1	19.0	89.2	5.5	5.3	88.0**	7.1	4.9
College degree									
Sexual Orientation									
Heterosexual	67.7	13.0	19.4	87.5	6.0	6.5	89.6*	4.2	6.2
Non-heterosexual	55.3	18.7	25.9	81.8	11.7	6.4	77.2	2.7	20.1
Venue Type									
Nightclub	66.0**	6.5	27.5	89.4*	2.1	8.5	88.7	0.9	10.5
Festival	62.9	24.0	13.1	82.1	13.9	4.0	83.5	7.3	9.2
Past-Year Marijuana Use									
No	76.0	9.4	14.6	80.3	7.9	11.7	93.4	0.0	6.6
Yes	58.1	17.2	24.7	89.5	7.1	3.4	81.8	6.2	12.0
Past-Year Ecstasy Use									
No	74.4***	9.0	16.5	90.7*	4.5	4.7	90.8*	2.9	6.3
Yes	29.1	33.7	37.1	67.5	19.0	13.5	70.2	7.1	22.8

Note. Planned use indicates use that was reportedly planned. Comparisons were computed using chi-square.

* $p < .05$,

** $p < .01$,

*** $p < .001$