Group Influences on Individuals' Drinking and Other Drug Use at Clubs

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ABSTRACT. Objective: This article examines effects of the social group on individual alcohol and drug use upon entry and exit from the club. Based on collected biological measurements of alcohol and other drug use, this study explores whether social group indicators (e.g., group characteristics) are predictive of alcohol and other drug use for individual club patrons. **Method:** A total of 368 social groups, representing 986 individuals (50.7% female), were anonymously surveyed, and biological measures of alcohol and other drug use were collected at entrance and exit to clubs on a single evening. Both individual and group-level indicators were assessed. Because data were clustered by club, event, and group, mixed-model regressions were conducted to account for non-independence. **Results:** Group indicators of high blood alcohol concentration were being in a group that intends to get drunk, that has at least one member who regularly gets drunk, and that has discrepancies in its expectations regarding drug use. Group indicators related to cocaine use were high levels of drug use expected among group members, little discrepancy among the group members regarding the drug use expected, and high levels of intentions to get drunk. In addition, older groups were more likely to have higher levels of cocaine use. There were less consistent findings regarding group effects on marijuana use. The most consistent finding was that high drug use expectations were related to higher levels of marijuana use. **Conclusions:** Together, these data suggest that strategies should focus on recognizing group indicators as risks for group members. Promoting social responsibility for group members may create safer club experiences among young adults. These efforts could model designated-driver programs as a way to increase safety and social responsibility. (*J. Stud. Alcohol Drugs, 74,* 280–287, 2013)

AMONG YOUNG ADULTS, nightclubs that feature electronic music and dance events provide contexts in which social drinking occurs and high-risk behaviors related to drug and alcohol use emerge (Miller et al., 2005, 2009). Our prior research indicates that, at exit, approximately a third of patrons provide breath samples indicative of legal intoxication (blood alcohol concentration [BAC] ≥ .08%), and approximately one quarter provide saliva samples indicative of other drug use (Miller et al., 2005, 2009). Given that this represents detection for a single evening and that club attendance occurs multiple times during the year, this is an important context for addressing these concerns.

Patrons typically arrive at clubs in groups of two or more (81.6%; Miller et al., 2009). Thus, behaviors of the drinking group may be influential (Gusfield, 2003). Groups consuming alcohol can increase risky decision making (Sayette et al., 2004). Excessive drinking is possibly influenced by social modeling and peer influences. Borsari and Carey (2001) revealed that when paired with confederates modeling heavy or light alcohol consumption, college students modeled the confederate's drinking behavior. This influence may be greater if an influential social group member models either restraint or heavy drinking. The influence of "drinking buddies" is greater than that of peers in general (Leonard and Mudar, 2000, 2003). Alcohol expectancies (Lange et al., 2006) and the size of the group (Demers et al., 2002) are also important. Increases in the group size have significantly predicted growth in alcohol expectancies, and expectancies predicted growth in alcohol use, heavy alcohol use, and alcohol-related problems (e.g., fights) (Lau-Barraco et al., 2012).

Our prior work indicated that group characteristics were related to risky decision making (e.g., drinking and driving) associated with club patrons' alcohol consumption (Johnson et al., 2012). Drivers who knew their passengers well were more likely to drive with higher BACs (>.05%). Also, all-female groups at clubs were significantly more likely to depart with a driver with higher BACs (>.05%).

Theoretical perspectives offer insight into these dynamics, although the precise mechanisms are unknown. Using the theory of normative social behavior, Rimal and Real (2005) propose that the relationship between behavior and perceptions of the prevalence of a behavior (e.g., descriptive norms) are moderated by (a) the strength of the affiliation with one's

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reference group, (b) the belief that engaging in a behavior will confer positive outcomes, and (c) pressures individuals experience to conform to codes of conduct (e.g., injunctive norms). Regarding alcohol consumption, when people believe that many others are drinking, they increase their consumption if they perceive the other drinkers as highly similar to themselves. Drinking increases if it is perceived as conveying benefits or if there are strong social pressures to drink. In a test of this theory, surveys of incoming college students revealed that the most influential normative mechanism was students' perceptions of alcohol-related outcomes (Rimal and Real, 2005). Greater perceived benefits and beliefs that most peers drank were both influential (Rimal and Real, 2005). The theory of normative social behavior offers several empirical paths to pursue, including applying the theory to natural groups in natural drinking settings and to older individuals.

According to social cognitive theory, peers influence individual alcohol and other drug use through direct or indirect processes (Borsari and Carey, 2001; Maisto et al., 1999). Direct processes include actively offering substances to peers, whereas indirect processes include both modeling and the influence of perceived norms (Borsari and Carey, 2001).

This article examines the normative influences on drinking and other drug use behavior among young adult social groups in a natural drinking environment. The current study focuses on indirect processes, examining characteristics of natural social groups (e.g., perceptions of group drinking and other drug use expectations) that influence individual drinking and other drug use. Our hypotheses are that group characteristics and individuals' perceptions about other group members' intentions to drink and use other drugs will be positively related to their own behaviors. In addition, we hypothesized that group structure (e.g., size) and characteristics (e.g., age, gender composition) would influence drinking and other drug use behaviors. Both entry and exit levels of individual alcohol and other drug use were examined by collecting biological measures.

Method

Clubs and events

Data were obtained from patrons ($N = 986$) who entered in groups ($N = 386$) of two or more. Both entrance and exit data were collected from 38 different events at eight nightclubs over an approximately 30-week period, from April through November 2010. Portal methodology was used to permit anonymous data collection and linking of entrance and exit data (Voas et al., 2006); previously, this methodology had been used successfully at electronic music and dance events (Miller et al., 2005, 2009).

Eligible clubs met these criteria: (a) The featured entertainment was an electronic music and dance event, (b) typically 200 or more patrons entered the club, (c) the location was safe for outdoor data collection, and (d) club management granted permission. We contacted 13 clubs and received permission from 9. We dropped one club because of safety concerns. Club refusals were expressed as follows: that their "high end" patrons would view research as a hassle, research might deter business, and data might be used against them.

Promoters arrange the featured event for the evening. Because event advertisements vary and promote different themes, there can be great variation in patrons and in risky behaviors across events, both across and within clubs (Miller et al., 2005).

Participants

Study participants were recruited randomly on the sidewalk as they approached the club. Street recruitment is difficult, and approximately 40% of individuals approached did not stop to listen to the recruiter. Participants were ineligible if they were working at the club, arrived alone, or were not entering the club. Among eligible patrons who listened to the recruitment presentation, two thirds (63%) participated. A desire to enter the club quickly was a primary reason for refusal. Participants were read the informed consent approved by the institutional review board at the Pacific Institute for Research and Evaluation. They were given a wristband with a unique identifier, which allowed for anonymity and the ability to link entrance and exit data. Each respondent was offered $10.00 after completion of entry data collection and $20.00 after the completion of the exit data collection. The vast majority (89.3%) provided both entrance and exit data. Because of anonymity, it was possible for patrons to participate more than once over the months of data collection. However, only 2% reported prior participation.

Measures

Individual drug and alcohol use at entry and exit. BAC level was estimated from breath samples collected using the Intoxilizer 400PA breath alcohol analyzer units (CMI, Inc., Owensboro, KY). In 5% of cases, the breath test at exit was missing. This was mainly because the individual did not complete the exit survey/interview (44.4%) or because duplicate breath alcohol analysis test numbers were recorded (44.4%). If the breath test was missing, the BAC level was approximated using the data from the oral fluid sample (see Johnson et al., 2012, for details). Results for the alcohol and other drug tests were not available in the field.

Presence of other drug use was determined by means of oral fluid samples using the Quantisal collection device (Immunalysis Corporation, Pomona, CA). This device provides an indicator tip that turns color when sufficient fluid is present for analyses. In the laboratory, the first test was

to determine if a drug was present, and a second confirmatory test was completed on positive screens to determine the level of drug use in parts per milliliter (pp ml). Categories of substances assayed included (a) marijuana (tetrahydrocannabinol [THC]), (b) cocaine (i.e., benzoylecgonine, cocaethylene, norcocaine), (c) amphetamines/Ecstasy (i.e., methamphetamine, 3,4-methylenedioxymethamphetamine [MDMA/Ecstasy], 3,4-methylenedioxyamphetamine [MDA], 3,4-methylenedioxy-N-ethylamphetamine [MDEA]), (d) opiates and analgesics (i.e., morphine, codeine, 6-acetylmorphine [6-AM], hydromorphone, hydrocodone, oxycodone, oxymorphone, methadone), (e) phencyclidine (PCP), and (f) ketamine. Gamma-hydroxybutyrate (GHB) is not detectable through biological assays, and only self-reports were available. The highest level of drugs within each of these categories was used. All scales within category were comparable except for opiates/analgesics. Drugs within this category were standardized before using the highest level as an indicator of level of drug use.

Alcohol/other drug-related group-level predictors (entrance reports). Using entry data, group-level predictors were created by aggregating the individual-level responses (within group) as follows: (a) average of drinking intentions—responses from individuals within the group ranged from 0 (*not planning to drink*) to 4 (*planning to get very drunk*); (b) discrepancy in drinking intentions—the difference in scores between the lowest versus the highest drinking intentions within a unique group; (c) average drunkenness expectations—for the question, "Tonight, do you expect that most of the members of your group will . . . ," responses ranged from 0 (*stay sober*) to 4 (*get very drunk*); (d) discrepancies in drunkenness expectations—the lowest was subtracted from the highest drunkenness expectation score; (e) frequent drunk members—whether someone in the group frequently gets drunk when they go out. Responses were first aggregated and then dichotomized within the group (0 = *no member frequently gets drunk,* 1 = *at least one member frequently gets drunk*).

Group-level predictors regarding drugs were created by aggregating the individual-level responses (within group) as follows: (a) average of drug use expectations—the level of drug use expected within their group, with responses ranging from 0 (*no one will use drugs*) to 2 (*someone will get really high*); (b) discrepancy in drug use expectations within the group—the difference in scores between the lowest versus the highest drug use expectation.

Other group characteristics. Other group characteristics were the following: (a) gender (percentage of the group that was male), (b) percentage of the group comprising either part- or full-time students, (c) dyads versus larger (groups with only two members were coded as 0, and groups with three or more members were coded as 1), (d) size of group, (e) average age for group, (f) percentage heterosexual, (g) responsible member (respondents were asked whether there is someone in the group that usually takes responsibility for the group's safety). Responses for (g) were dichotomized to reflect whether at least one person takes responsibility (0 = *no,* 1 = *at least one person*) and were then aggregated at the group level, resulting in an average for the group members' responses. The final group characteristic variable was (h) concern for safety (participants reported their level of concern about the group's safety that night from 0 [*not concerned*] to 3 [*very concerned*]. Responses for (h) were dichotomized so that 0 = none/a little concern and 1 = moderately/very concerned and were then aggregated at the group level to indicate the average level of concern.

Group gender, percentage students, and discrepancy among group members regarding intentions to drink that night were not used in analyses because of nonsignificant correlations with drinking and other drug use outcomes.

Individual demographic characteristics. Gender (0 = *male,* 1 = *female*), race (0 = *White,* 1 = *non-White*), age, and time spent in the club (minutes) were included as control variables for analyses.

Analyses

Because data were clustered by club, event, and group, mixed-model regressions were conducted using SPSS 18 (SPSS Inc., Chicago, IL) to account for non-independence. Club, event, and group were the nested levels. When including both the individual and group-level variables in the same analysis, we group mean centered the individual variable (individual score minus their group mean) so the individual variable then indicated the individual's difference from their group's score. Because of the large number of demographic variables (individual and group), only variables that were significantly correlated with outcomes were included.

The average amount of time elapsed between entrance and exit at the club was slightly more than 2 hours (M = 131 minutes, SD = 59.18). Because of the short duration of time, the preloading of alcohol and/or other drugs before arrival at the club contributes to the exit level of alcohol and/or other drugs—entrance measures of alcohol and other drug use are directly contributing to the exit values. There are two ways to examine exit levels of these substances. By examining the exit levels controlling for the entrance level of the substances, the influence of group characteristics above and beyond individual characteristics on the change of the level of alcohol/other drug use while at the club is provided. However, we were most concerned about the cumulative risk from the alcohol and/or other drug use for the evening and with how this risk was influenced by group and individual characteristics for the purposes of informing prevention strategies that address risks at exit. Thus, we conducted three sets of analyses: predicting exit level of alcohol/other drugs without controlling for entrance level (cumulative BAC/other drug use); predicting exit level of alcohol/other drugs con-

trolling for entrance level (changes in BAC/other drug use while in the club); and predicting entrance level of alcohol/other drugs (preloading of alcohol/other drug use).

Results

Characteristics

Individuals. Those younger than 25 years old comprised 25.2% of the sample, and 25- to 29-year-olds comprised 32.8%. Half were female (50.7%) and half were male (48.2%), with slightly less than 1% self-identifying as transgender and slightly less than 1% not reporting gender. Nearly three fourths (70.5%) of participants described themselves as heterosexual, 16.7% as gay or lesbian, and 9.4% as bisexual, with the remaining 3.3% indicating either unsure or not reporting. Racial/ethnic identities were 39.9% White, 26.1% Hispanic, 16.7% Asian, 7.1% Black, 5.0% another ethnicity, and 5.1% multiracial. More than half of participants (58.7%) reported that they had either graduated from college or had completed graduate/professional school. Approximately 10% had a high school diploma or less education. Nearly two thirds (61.8%) had full-time employment. However, nearly a fifth (19.7%) reported that they were unemployed. One third (33.2%) of the patrons were either full- or part-time students. Incomes were reported as $20,000 or less (32.7%), $20,001–$40,000 (22.2%), $40,001–$60,000 (20.3%), $60,001–$80,000 (12.1%), and more than $80,000 (12.7%) (in U.S. dollars).

Groups. For the 386 social groups included in these analyses, half (49%) were mixed gender, a quarter (27.4%) were all female, and another quarter (23.6%) were all male. Most groups (62.0%) comprised two participants (a dyad), and the remaining groups (38.0%) had three or more members. In nearly half (44%) of the groups, all members of the group reported one or more persons as responsible for group safety. Only 12.2% of groups did not identify anyone as responsible for the group and its safety.

Drug and alcohol use

Individuals. At entry, more than half (53.8%) of patrons had consumed alcohol (i.e., pre-loaded), as detected by biological assays. At exit, three fourths (77.2%) had consumed alcohol. At entry, 21.6% of the patrons had used other drugs detected by biological assays. At exit, this had risen slightly to 25.0% and percentages were as follows: (a) marijuana, 17.2%; (b) cocaine, 7.0%; (c) amphetamine/MDMA, 5.1%; (d) opiates/analgesics, 1.4%; (e) PCP, 0%; and (f) ketamine, 0%. GHB was self-reported by 0.3%.

Groups. At entry, nearly two thirds (63.3%) of groups had one or more members who had used alcohol (i.e., preloaded), with an average BAC of .05% (SD = .03) among these groups. At exit, 88% of groups had at least one member who had used alcohol. Among groups with alcohol users, the average BAC was .07% (SD = .04). Based on the legal limit for intoxication (BAC of .08%), nearly a quarter (23.2%) of groups had one or more members who were intoxicated at entry. At exit, this rate doubled, with almost half (48.1%) of groups having one or more intoxicated members.

At entry 8.4%, and at exit 11.4%, of groups had at least one member who tested positive for cocaine use. Among groups with cocaine use, the average level dropped from entrance to exit (entry M = 2,982.32 ng/ml, SD = 6,676.52; exit M = 2,178.95 ng/ml, SD = 7,326.93).

At entry 23.6%, and at exit 27.4%, of groups had at least one member who tested positive for marijuana. Among groups with marijuana use, the average level decreased from entrance to exit (entry M = 188.50 ng/ml, SD = 436.02; exit M = 119.52 ng/ml, SD = 330.70). The remainder of the drug categories were not present in sufficient numbers of groups to analyze.

Mixed-model regressions

Mixed-model regressions determined group-related and individual indicators of the individual's alcohol, marijuana, and cocaine levels. Controlling for the nested design, individual levels of these substances were predicted in three different sets of analyses: cumulative use at exit, change of use controlling for entrance level, and level at entrance. Results were similar across these different sets of analyses, and Tables 1–3 represent the findings from cumulative use at exit. Table 4 presents a summary of significant findings across cumulative, change, and entrance models.

Predicting cumulative alcohol use at exit. Being in a group with a higher average for drinking intentions and being in a group with at least one frequently drunk member increased exit BACs (Table 1). One additional group indicator that was a trend (p = .058) was a greater discrepancy among group members about drug expectations being linked to a higher level of the individual's BAC at exit. Spending more time in the club was significantly related to increases in BAC at exit. For individual-level parameters, only one was marginally related; being White trended toward a relationship with higher exit BAC (p = .077). Notably, none of the following group indicators were related to greater alcohol consumption: group size, mean age, group sexual orientation, or group safety concerns. Also, neither the individual's gender nor age was related to BAC at exit.

Predicting change in alcohol use from entrance to exit. Controlling for entry BAC, predictors of higher individual exit BAC were similar to the preceding model. Higher within-group averages of personal drinking intentions were significantly related to higher exit BACs (b = 1.85, p < .001). Having no frequent drunk members resulted in lower exit BAC (b = -1.00, p < .01). One additional group-level indicator was identified. As personal concern for group safety in-

TABLE 1. Mixed-model regression of group predictors of individuals' cumulative blood alcohol concentration at exit (N = 368 groups)

Parameter	*b*	*SE*	*t*	*p*
Individual level				
Female	0.20	0.31	0.66	.511
Non-White	-0.58	0.33	-1.77	.077
Age	0.00	0.04	-0.07	.948
Time in club	**0.01**	**0.00**	**4.90**	**.000**
Group level				
Group size	-0.17	0.16	-1.08	.281
Dyad[a]	-0.39	0.46	-0.86	.392
Group mean age	0.00	0.02	0.06	.950
Percentage heterosexual	0.00	0.00	-1.10	.272
Average drinking intentions	**3.10**	**0.27**	**11.41**	**.000**
Average drunkenness expectations	0.04	0.26	0.17	.865
Discrepancy in drunkenness expectations	0.02	0.20	0.12	.905
No frequent drunk members	**-1.35**	**0.47**	**-2.87**	**.004**
Average of drug use expectations	-0.06	0.43	-0.14	.886
Discrepancy in drug use expectations	0.58	0.31	1.90	.058
Responsible member	0.27	0.49	0.54	.587
Concern for safety	0.01	0.48	0.02	.985

Notes: **Bold** indicates statistical significance. [a]As compared with larger than a dyad.

creased, BAC change decreased (b = -0.86, p < .05). Greater group discrepancy in drug use expectations trended toward increasing BAC change (b = 0.46, p = .053). More time spent in the club predicted increases in changes of BAC in the club (b = 0.02, p < .001) as in the prior set of analyses. As may be expected, because of the duration of time in the club, higher entry BAC (b = 0.79, p < .001) predicted exit BAC.

Predicting preloading of alcohol (entry BAC). Similar to the model predicting cumulative exit BAC, being in a group with greater drinking intentions (b = 1.51, p < .001) was related to higher entry BAC. A new relationship was identified with higher average drunkenness expectations (b = 0.47, p < .05) related to higher entry BAC. In contrast to the preceding model, higher average group scores for safety concerns were related to higher individual entry BACs (b = 1.22, p < .01). Groups with only two members had lower entry BACs (b = -0.88, p < .05), as did non-White individuals (b = -1.04, p < .001). Higher average drug use expectations (b = 0.63, p = .07) and greater discrepancy regarding group drunkenness expectations (b = 0.31, p = .065) trended toward significantly increasing BACs. In contrast to preceding models, frequent drunk members was not significantly related to entry BACs.

Predicting cumulative cocaine levels at exit. Being in a group with high drug use expectations predicted higher levels of cocaine use by individuals at exit (Table 2). Being in a group with less discrepancy in drug use expectations also predicted higher levels of cocaine at exit. Being in an older group predicted more cocaine use. Groups who expected their members to get drunk trended toward higher levels of

TABLE 2. Group level predictors of individuals' cumulative cocaine level at exit (N = 368 groups)

Parameter	*b*	*SE*	*t*	*p*
Individual level				
Female	23.77	190.56	0.12	.901
Non-White	342.58	199.46	1.72	.086
Age	9.04	26.38	0.34	.732
Time in club	-1.74	1.77	-0.98	.326
Group level				
Group size	-9.94	100.07	-0.10	.921
Dyad[a]	216.64	283.38	0.76	.445
Group mean age	**39.11**	**14.97**	**2.61**	**.009**
Percentage heterosexual	1.22	2.75	0.45	.657
Average drinking intentions	-122.73	166.13	-0.74	.460
Average drunkenness expectations	309.00	160.36	1.93	.054
Discrepancy in drunkenness expectations	79.11	128.66	0.61	.539
No frequent drunk members	-130.49	288.31	-0.45	.651
Average of drug use expectations	**923.60**	**264.81**	**3.49**	**.001**
Discrepancy in drug use expectations	**-539.93**	**191.96**	**-2.81**	**.005**
Responsible member	-167.72	303.11	-0.55	.580
Concern for safety	147.87	300.87	0.49	.623

Notes: **Bold** indicates statistical significance. [a]As compared with larger than a dyad.

TABLE 3. Mixed model regression of group predictors of individuals' cumulative tetrahydrocannabinol use at exit (N = 368 groups)

Parameter	*b*	*SE*	*t*	*p*
Individual level				
Female	-27.43	14.90	-1.84	.066
Non-White	20.76	15.78	1.32	.189
Age	0.43	2.06	0.21	.833
Time in club	0.09	0.14	0.66	.509
Group level				
Group size	-9.75	8.16	-1.19	.233
Dyad[a]	-15.32	22.51	-0.68	.496
Group mean age	-0.95	1.21	-0.79	.429
Percentage heterosexual	0.38	0.23	1.68	.094
Average drinking intentions	-7.45	13.21	-0.56	.573
Average drunkenness expectations	4.09	12.61	0.32	.746
Discrepancy in drunkenness expectations	-7.96	10.08	-0.79	.430
No frequent drunk member	-19.28	22.75	-0.85	.397
Average drug use expectations	**70.77**	**20.67**	**3.42**	**.001**
Discrepancy in drug use expectations	19.43	14.96	1.30	.194
Responsible member	15.29	23.79	0.64	.521
Concern for safety	-1.33	23.45	-0.06	.955

Notes: **Bold** indicates statistical significance. [a]As compared with larger than a dyad.

cocaine at exit (p = .054). As an individual-level indicator, being White was marginally associated with lower levels of cocaine use at exit (p = .086).

Predicting change in cocaine levels. Controlling for entry levels of cocaine, predictors of greater levels of cocaine at exit were similar to the model above: being in an older group (b = 34.52, p < .05), average of drug use expectations (b = 766.89, p < .01), and less discrepancy in drug use expectations for the group (b = -480.59, p < .05). Average of drunkenness expectations for the group (b = 336.06, p < .05) was also a significant predictor. As expected, higher levels of cocaine at entry predicted higher levels at exit (b = 0.12, p < .001). Being non-White predicted higher cocaine levels at exit at the trend level (b = 366.09, p = .065).

Predicting preloading of cocaine. As in the model predicting cumulative cocaine use at exit, belonging to older groups (b = 42.09, p < .01) in which members had greater expectations for drug use highs (b = 1,402.56, p < .001) and less discrepancy in expectations about drug use (b = -622.03, p < .01) was significantly related to higher levels of cocaine at entry. Greater average drinking intentions (b = 417.57, p < .05) was also now related to higher levels of cocaine use at entry, as belonging to a dyad rather than a larger group was related to lower cocaine levels at entry (b = -751.70, p < .05).

Predicting cumulative marijuana use at exit. Expected drug use among group members also predicted higher levels of exit THC for individuals (Table 3). Groups with higher proportions of heterosexual members trended toward higher levels of THC at exit (p = .094). Also, as an individual-level parameter, women trended toward lower levels of THC at exit (p = .066).

Predicting change in marijuana levels. Controlling for entry-level of marijuana use, greater discrepancy in drug use expectations (b = 35.68, p < .01) was related to higher marijuana use at exit, whereas, as expected, higher marijuana use at entry (b = 0.56, p < .001) predicted more use at exit. Average of drug use expectations for the group was no longer significant. As in the preceding model, being female (b = -33.01, p < .01) was related to lower exit levels of marijuana.

Predicting preloading of marijuana. Consistent with the model predicting cumulative marijuana use at exit, belonging to a group in which members expected more drug use (b = 152.08, p < .001) resulted in higher levels of entry THC. Less discrepancy about drunkenness expectations (b = -25.20, p < .05) now resulted in higher levels of entry THC.

Summary across models. Group-level indicators that were more consistently related to higher levels of BAC were being in a group with high level of drinking intentions and that regularly has at least one member who gets drunk (Table 4). The group-related variables that did not emerge in predicting BACs are of equal interest. In contrast to some earlier studies, group size, gender composition (nonsignificant in bivariate analyses, therefore excluded from multivariate analyses), and group mean age were not related to higher or lower BACs.

Group-related variables that were more consistently related to cocaine levels included high levels of drug use expected, little discrepancy among the group regarding drug use expected, and high levels of drinking intentions (Table 4). In addition, older groups were more likely to have higher levels of cocaine. There were less consistent findings regarding group effects on marijuana levels. The most consistent finding was that high drug use expectations were related to higher levels of marijuana. Perhaps the more consistent findings for cocaine use were related to smaller proportion of groups that used cocaine (approximately 10%) as compared with approximately one fourth of the groups using

TABLE 4. Summary of regression models for predicting entry, cumulative, and change for alcohol, cocaine, and marijuana levels

	Model dependent variable								
	Alcohol (BAC)			Cocaine			Marijuana		
Variable	Entry	Cumul. exit	Change exit	Entry	Cumul. exit	Change exit	Entry	Cumul. exit	Change exit
Individual level									
Female						tr.			sig.*
Non-White	sig.								
Age									
Time in club	N.A.	sig.	sig.	N.A.			N.A.		
Entry value	N.A.	N.A.	sig.	N.A.	N.A.	sig.	N.A.	N.A.	sig.
Group level									
Group size									
Dyad[a]	sig.			sig.					
Group mean age				sig.	sig.	sig.			
Percentage heterosexual									
Average drinking intentions	sig.	sig.	sig.	sig.		sig.			
Average of drunkenness expectations	sig.								
Discrepancy in drunkenness expectations	tr.						sig.*		
Frequent drunk members		sig.	sig.						
Average of drug use expectations	tr.			sig.	sig.	sig.	sig.	sig.	
Discrepancy in drug use expectations			tr.	sig.*	sig.*	sig.*			sig.
Responsible member for group safety									
Concern for group safety	sig.		sig.*						

Notes: Blank cells are nonsignificant. *Sig.* indicates the variable was significant at $p \leq .05$. *Tr.* indicates trend at $p > .05$ but $< .10$. BAC = blood alcohol concentration; cumul. = cumulative. N.A. = not applicable. *Denotes negative relationship between variables. [a]As compared with larger than a dyad.

marijuana. Another possible explanation for the differences in group effects for these two types of drugs may be related to different perceptions about how these drugs contribute to party behavior.

Discussion

Our findings reveal that social groups have an impact on individual outcomes. Patrons appear to know about the other group members' drinking and other drug use patterns, and these patterns are related to their own drinking and other drug use. This suggests that normative patterns are established for the group and/or social modeling occurs within the group. There are also relationships between the group's higher levels of intending to drink and their other drug use behaviors, specifically cocaine use. Of particular interest is the finding that for groups who are more concerned about safety at entrance, there is a higher level of alcohol use at entrance. By exit, higher levels of concern at entrance are related to lower levels of alcohol use (model representing change in alcohol use while in club). This suggests that awareness of risks within the group can be identified at entrance and that behaviors while in the club can be affected by awareness of risk at entry. Perhaps our asking the questions about group safety increased their awareness and affected their behavior during the evening.

Given that group influences are demonstrated to affect individual outcomes, interventions to reduce alcohol- and drug-related risks that target the group may be warranted. There is some evidence that a brief intervention with a group can increase awareness of safety concerns to change the behavior of the group members during their night of drinking (Kelley-Baker et al., 2011). Another example of peer and social group influences on drinking behaviors has emerged in the public health approach to preventing drinking and driving. Public safety announcements have emphasized that "friends don't let friends drive drunk." This messaging might be expanded to encourage other safety strategies among the group and to identify the importance of group safety.

These natural settings present limitations. Recruitment in clubs is difficult, and people who are engaged in high levels of drug and alcohol use at entrance may be less likely to participate in a research study. Prior research has suggested that women are more likely to participate than men, and

minorities more likely to participate than Whites (Wells et al., 2010). This could result in an underreporting of group-level influences on individuals' drug/alcohol use. However, our findings indicate that there were almost equal numbers of men and women participating. Individuals who agreed to participate in the study may be more influenced by group behaviors compared with people who did not participate. Last, the nature of recruiting patrons as they enter and exit the venue creates some limitations. This recruitment strategy requires that clubs agree to allow the research team to establish a data collection site close to the venue. To the extent that the access to clubs is related to characteristics of the patrons limits the generalizability of findings. Further, this method reduces the amount of time for data collection, and the number of questions must be limited.

Despite limitations, these findings provide important contributions to our understanding, and the reliance on biological measures of alcohol and other drug use is particularly strong. Most prior studies have relied on self-report of alcohol and/or other drug data to assess use and related problems (Degenhardt et al., 2006). Comparing self-reports to biological measurements of alcohol use has shown, however, that individuals often incorrectly estimate their BAC, especially when they have consumed alcohol heavily (Clapp et al., 2006).

The social group appears to influence young adult alcohol and other drug use in the context of electronic music and dance events, an important type of social event that is prevalent in urban communities. Future studies should examine the detailed processes underlying these influences. Developing safety strategies for this setting is especially important given the prevalence of young adults engaged in high-risk drug and alcohol use who are not accessible through other, traditional contexts (e.g., universities, colleges) and may be difficult to reach through more traditional community approaches. Last, these findings suggest a naturally occurring social network that presents an opportunity to increase safety for young adults who drink and use other drugs.

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