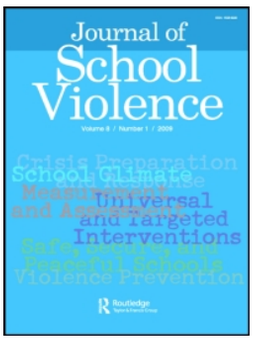

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Binge Drinking, Greek-Life Membership, and First-Year Undergraduates: The "Perfect Storm" for Drugging Victimization

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ABSTRACT

Drugging victimization is an understudied phenomenon. This study examines the relationship between the campus party culture and drugging victimization. Campus party culture has been shown to influence risk of other types of victimization, and there is reason to believe it may also influence drugging victimization. Using three behavioral indicators of participation in the campus party culture—binge drinking, Greek life membership, and first-year student status—this study estimates the main effect of each indicator, and their interaction, on undergraduates' rates of drugging victimization. Estimating a generalized linear model using a large random sample (N = 6,931) from three universities, results show that each party culture variable and their three-way interaction significantly influenced students' rate of drugging victimization. Sorority members who were first-year students and binge drank at least once in the past month had significantly higher rates of drugging victimization compared to all other groups of students.

KEYWORDS

Binge drinking; drugging victimization; first-year undergraduates; Greek life; party culture

College students are CONSIDERED a high-risk group for drugging; that is, administering a drug or alcohol to someone without their knowledge or consent. Two recent studies found that an estimated 1 in 13 college students report ever experiencing at least one incident in which they suspected or knew that someone put a drug into their drink without their knowledge; one study found this estimate with college women (Coker, Follingstad, Bush, & Fisher, 2016), and a second study found the same estimate with a mixed-gender sample of college students (Swan et al., 2016). Some sources suggest that most drugging incidents are misperceived, and that individuals simply drank too much alcohol (Burgess, Donovan, & Moore, 2009; Weiss & Colyer, 2010). However, contrary to these claims, there is evidence from individuals who drugged others, as well as individuals who were drugged, establishing that drugging victimization occurs and that it is an issue in need of further investigation, especially among young adults (McPherson, 2007; Swan et al., 2016).

Beyond the sheer prevalence of drugging victimization, college students are a relevant population for examining this phenomenon for a number of interconnected behavior-related reasons. First, drink spiking has been found to be positively correlated with alcohol consumption (see, e.g., Arizona State University, n.d.; Swan et al., 2016). According to the National Institute on Alcohol Abuse and Alcoholism (2015), about four out of five college students drink alcohol. Considering the correlation between alcohol and drink spiking, this finding suggests that a large number of the over 19 million college students in the United States may be exposed to the risk of being drugged (U.S. Department of Commerce, n.d.). Second, adding to the potential risk of drinking, college students also have high rates of binge drinking. According to the Task Force of the National Advisory Council on Alcohol Abuse and Alcoholism (2002), an estimated two out of five college students have engaged in binge

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drinking at least once during the past 2 weeks. Even more disturbing is the National Institute on Alcohol Abuse and Alcoholism's estimate that 4.3% of college students in 2014 consumed five or more drinks in a row on a daily basis (Johnston, O'Malley, Bachman, Schulenberg, & Miech, 2015). Third, first-year undergraduates—there are about 4 million annually—are at high risk for alcohol use and misuse, which, in part, is influenced by the freedom of being away from home and expectations that everyone parties in college, especially those who are being recruited and pledging to become members of Greek life (Cashin, Presley, & Meilman, 1998). Finally, fraternity and sorority members report higher levels of drug use than nonmembers (McCabe, Knight, Teter, & Wechsler, 2005), indicating that drugs may be available in the Greek life context and can be surreptitiously administered to other students. These factors contribute to a first-year student drinking culture that tends towards dangerous habits like binge drinking, and which likely affect the risk of incoming undergraduates being drugged.

Binge drinking during college and Greek life membership are both associated with party culture (i.e., an emphasis on heavy drinking in social groups), and first-year undergraduate students are also more likely to participate in the campus party culture (Cashin et al., 1998); therefore, these variables may also influence drugging victimization. However, no study, to date, has looked into the possibility of the main or the interaction effects of these factors. The current article builds upon and extends our past drugging victimization research (Swan et al., 2016) and the few other published studies on drugging by examining some unanswered questions about the relationship between participation in the campus party culture and drugging. Since the current body of drugging victimization research is emerging and nascent, it would be informative to explore further the campus context in which drugging occurs. To that end, the current study uses survey data from a large stratified, random sample of American undergraduate students from three public universities to examine the relationship between participation in the party culture and drugging victimization. Given the current state of the body of drugging research, it remains an open question as to whether and how participation in this culture influences college students' drugging victimization. To address this question, we test exploratory hypotheses concerning participation in the campus party culture and drugging victimization. To contextualize more fully the campus party culture's effect on drugging victimization, we review the state of drugging research and describe how and why participating in the campus party culture may create opportunities for drugging victimization.

Prevalence of drugging victimization

The prevalence of drugging victimization has been estimated by a relatively small number of researchers and presents a wide range of estimates. Swan and colleagues (2016) found that 7.8% (n = 462) of their sample of undergraduate college students at three American universities had ever been drugged. These students reported 539 separate drugging incidents, suggesting that some victims experience repeat drugging. This estimate is similar to that of another recent study; Coker and colleagues (2016) surveyed 959 American women ages 18–24 and found that 7.8% of college women and 8.5% of noncollege women had ever been drugged. Weiss (personal communication, November 1, 2012), in her analysis of data from a campus crime study, found a slightly lower percentage among undergraduates: 6% of students in her sample had been drugged while at college. Two studies conducted in Australia shed additional light on the phenomenon of drugging. McPherson (2007) found that 25% of a sample of 805 Australians ages 18–35 had ever experienced drugging victimization. Also, an Australian go report estimated that 3,000–4,000 drugging incidents occurred in Australia between 2002 and 2003 (15–19 incidents per 100,000 persons; Australia Ministerial Council on Drug Strategy, 2004).

Estimating the national prevalence of drugging victimization is compromised by a number of factors. First, neither of the two main sources of national victimization data in the United States, the Uniform Crime Report and the National Crime Victimization Survey, include drugging as a category of victimization. Second, national studies of college students, such as Kilpatrick and colleagues

(2007), focus narrowly on drug- and alcohol-facilitated sexual assault, rather than considering the act of administering a drug or alcohol to someone without their knowledge or consent itself as a crime (see also Krebs, Lindquist, Warner, Fisher, & Martin, 2007). Third, hospital-based data, such as forensic toxicology studies, are unable to provide accurate population-based estimates of drugging victimization. Many victims of drugging do not seek help from formal support sources, including law enforcement and medical professionals, for reasons ranging from not wanting to disclose voluntarily consumed substances, to uncertainty about whether or not they had been drugged, to victims' fear that they will not be believed (Taylor, Prichard, & Charlton, 2004). As a result, these individuals would not be included in hospital records that keep track of relevant drugging information or police records as part of the victim's statement. Thus, drugging victimization is most likely underreported even to sources whose mission is to assist and provide services for crime victims (Australian Drug Foundation, 2016). Fourth, many drugs that could be used in drink spiking are quickly excreted from the body and may not be detected by a forensic toxicology study. While Rohypnol ("roofies") can be detected up to 72 hours after ingestion (U.S. Department of Health and Human Services, 2012), other drugs, such as gamma-hydroxybutyrate (GHB), can be undetectable in as little as 10 hours following ingestion (Madea & Musshoff, 2009). Moreover, the majority of published toxicology studies only consider individuals who had experienced drug-facilitated sexual assault, rather than drugging victimization more generally.

Altogether, the current state of research on drugging suggests that there is much yet to be learned about drugging victimization, particularly outside the context of sexual assault. Most of the media attention to drugging has focused on its relationship to sexual assault victimization (see, e.g., Kisner, 2015), yet recent research indicates that a number of other crimes can result from drugging (Swan et al., 2016). Furthermore, in many instances drugging does not result in any additional forms of victimization (Swan et al., 2016; Taylor, Charlton, & Pritchard, 2004). As such, this study seeks to understand the context of drugging victimization; specifically, whether and how participation in the campus party culture, operationally defined as binge drinking, Greek life membership, and first-year undergraduate status, influences drugging victimization.

Campus party culture

A large number of students, especially first-year undergraduates, participate in the campus party culture of binge drinking and Greek-life membership (Peralta, Steele, Nofziger, & Rickles, 2010). Campus party culture refers to the use of rituals including heavy drinking (either at bars or house parties), drinking games, pregaming (i.e., drinking at home with friends before going out), tailgating, and often, drug use, with the end goal of becoming as intoxicated as possible within the context of a social group engaging in the same activities (Weiss, 2013). These rituals serve to "express one's involvement and commitment to a group" of one's fellow partygoers (p. 54, Weiss, 2013). Party culture often involves behaviors that would typically not be socially normative outside of the party context (e.g., "hooking up", dancing on tables, public nudity, burning things), as well as pranks that range from relatively benign to dangerous (and occasionally, deadly). The nonnormative behaviors and pranks often serve as bonding group experiences for the individuals involved (Weiss, 2013). First-year students, trying hard to fit in with a new social environment, may be especially motivated to engage in party culture, particularly if it is seen as normative among the social groups that they aspire to join (Peralta et al., 2010). Given these elements, it is likely that participation in the campus party culture, as well as first-year status, affects students' risk of experiencing drugging victimization. Relevant research on these three behavioral elements of the party culture is reviewed next.

Binge drinking

As explained by Hamby and Grych (2013), the use of alcohol and drugs can increase individuals' risks of perpetrating personal crimes by elevating psychological arousal, reducing behavioral inhibitions, and impairing judgment (see also Weiss, 2013; Weiss & Dilks, 2016). Past research also

indicates that students who drink heavily at parties report more favorable attitudes toward criminal behaviors and reduced perceptions of the risks associated with these behaviors (Lanza-Kaduce, Bishop, & Warner, 1997; Peralta et al., 2010).

Alongside the increased risk for criminal perpetration, participation in the campus drinking scene likely creates more opportunities for various forms of victimization, including drugging. Students who attend parties and drink alcohol are likely viewed by motivated offenders as attractive targets for a range of predatory crimes (Lasley, 1989; Peralta et al., 2010; Schwartz & Pitts, 1995). Voluntary consumption of alcohol, particularly in public venues such as a campus party, can increase victimization risk by reducing the ability to identify risky situations and to protect oneself from motivated offenders (Hamby & Grych, 2013; Weiss, 2013). As described by Armstrong and colleagues (2006), college parties not only include the cultural expectation that students drink heavily, but also that they trust their fellow partygoers not to victimize them. Reduced vigilance by partygoers may offer motivated offenders the opportunity to drug these individuals, regardless of whether the perpetrator's ultimate goal is simply to "have fun" or to use drugging as a means to committing a more serious offense (McPherson, 2007; Swan et al., 2016).

Although there are specific lifestyles and routines that may increase the likelihood of drugging victimization, such as Greek life membership, a number of studies have shown that simply being in college can be related to victimization due to the high levels of binge drinking prescribed by the campus party culture and the pressure to participate in this culture. Attending parties and drinking heavily is considered by many students to be a necessary part of college life, with some students feeling that campus events without alcohol are pointless (Rennison & Addington, 2014; Young, Morales, McCabe, Boyd, & D'Arcy, 2005). Students may become invested in the party culture of a campus because it is considered fun, allows students to fit in with their peers and make friends, and can increase status in a social group (Armstrong et al., 2006; Harris & Schmalz, 2016).

Many forms of campus crime have been linked with alcohol consumption on the parts of both victims and offenders (see Mustaine & Tewksbury, 2000, for an overview). Sexual assault victimization, in particular, has been positively and strongly correlated with the campus drinking scene, and most research on campus crime has focused on this particular offense (Boyle & Walker, 2016; Schwartz & Pitts, 1995). However, past research also has uncovered the connection between heavy episodic drinking and experiencing other forms of criminal victimization and perpetration, including physical assaults (American College Health Association, 2013), intimate partner violence (Biden, 2000), and hate crimes (Bishop et al., 2004), as well as property crimes and harassment (Fisher, Sloan, Cullen, & Lu, 1998).

Given the overwhelming evidence that various forms of victimization of college students are strongly connected to the campus drinking scene, and given that initial evidence suggests that drugging victimization is often linked to alcohol consumption (McPherson, 2007; Swan et al., 2016), the logical next step is for researchers to begin unraveling the relationship between binge drinking and drugging victimization. While prior studies have examined other consequences related to binge drinking and to Greek life that are often associated with party culture, including injury, death, sexual victimization, academic performance, and unprotected sex (American College Health Association, 2013; Biden, 2000; Cashin et al., 1998), none have focused specifically on drugging victimization as a possible outcome associated with participation in the campus party culture.

Greek-life membership

One lifestyle consistently associated with binge drinking is Greek-life membership, in part due to drinking rituals during recruitment, initiation, and fraternity house parties (Weiss, 2013). Fraternity men have been shown to have the highest rates of binge drinking on college campuses, compared to sorority women as well as nonmember men and women (Presley, Meilman, & Lyerla, 1993; Wechsler, Dowdall, Davenport, & Castillo, 1995). Wechsler and colleagues (2009, p. 396) concluded that "the single best predictor of binge drinking in college is fraternity membership." According to Workman (2001, p. 442), excessive drinking is framed by fraternity members as "a positive,

functional, and necessary activity." He argued that many Greek members factor their likely vulnerability into their decisions to get drunk, with the assumption that being in a vulnerable state would not result in malicious or dangerous repercussions. However, fraternity members may be at greater risk of perpetrating crimes against others due to the significant positive relationship between heavy drinking and perpetration (see, e.g., Harris & Schmalz, 2016), particularly for crimes against women due to the negative attitudes toward women that may be promulgated and reinforced within the fraternity culture (Boswell & Spade, 1996; Schwartz & Pitts, 1995). Greek-life membership also has been associated with higher levels of property victimization compared to rates for non-Greek students, while victims of personal crime have been shown to spend more time partying than nonvictims (Franklin, Franklin, Nobles, & Kercher, 2012).

Researchers have long recognized that attending fraternity parties plays an important role in college women's risk of various forms of victimization, especially sexual assault (Adams-Curtis & Forbes, 2004; Boswell & Spade, 1996; Mustaine & Tewksbury, 2000). Additionally, past research has uncovered that sorority members have even greater victimization risk than college female nonmembers due to their greater likelihood of engaging in binge drinking, as well as their greater frequency of attending fraternity parties (Minow & Einolf, 2009). Franklin (2016) found that sorority members face increased risk for sexual victimization compared to nonmembers because they drink alcohol with greater frequency and in larger amounts, have longer delays in assessing threatening situations, and are in contact with fraternity men more often (see also Norris, Nurius, & Dimeff, 1996). Additionally, Wechsler et al. (2009) found that while two thirds of fraternity members who binge drink in college were binge drinkers in high school, a high proportion (65%) of sorority members do not begin binge drinking until college. As a result, they argue that sorority members are at the greatest risk because, compared to fraternity members, they have the least experience with consuming alcohol, and, compared to female nonmembers, they are more likely to take up binge drinking upon entering college.

Considering the relationship between Greek-life membership and binge drinking, as well as other potential risk factors that may be present for individuals in these groups (e.g., negative attitudes towards women among some fraternity members), examining Greek-life membership among this sample of drugging victims may establish that it is a particularly salient risk factor. Furthermore, first-year undergraduates may become involved with Greek life early on in their college careers through attending parties and pledging for membership. As such, examining first-year student involvement in party culture may provide insight into their risk of drugging victimization.

First-year undergraduates

A number of studies have highlighted the "red zone effect" for first-year females, showing that college women are at the greatest risk for sexual victimization during their first semester, and that this is often related to initial participation in the campus party scene (Cranney, 2014; Flack et al., 2008; Kimble, Neacsiu, Flack, & Horner, 2008). According to Harford, Wechsler, and Seibring (2002), first-year college students' greater engagement in binge drinking, compared to other students, partly results from their sudden freedom from parental restrictions (see also Upcraft, 2002; Weiss, 2013). Additionally, much of the social networking engaged in by incoming students is in the context of campus parties, which typically include alcohol (Kuta, 2016). First-year undergraduates have been shown to drink alcohol in greater amounts and more frequently than do upper-class students (Bergen-Cico, 2000; DeSimone, 2007). Additionally, they are more likely than upper-class students to pledge for membership in Greek life, an activity which involves attending many activities and parties and which provides more opportunities for binge drinking, as well as opportunities for victimization (Kuh & Ardold, 1993; Nuwer, 1999). Coupled with these factors is the inexperience of first-year students, who not only may be inexperienced drinkers, but also do not yet have institutional knowledge such as which groups are seen as benign, versus which groups have reputations for

harmful behaviors, including administering drugs or alcohol to someone without their knowledge or consent.

Taken together, these factors suggest that a logical extension of the body of research examining the "red zone effect" is that first-year college women may also experience higher rates of drugging victimization given that they are more likely to participate in the party scene as they seek to make new friends and become involved in college life. To date, however, the relationship between drugging, engagement in the party culture, and class year has not been examined simultaneously.

The present study

Collectively, the reviewed literature indicates that little is known about drugging victimization, including the prevalence of drugging victimization and the demographic characteristics of victims. Additionally, the campus party culture may create unique opportunities for drugging victimization, particularly for students who engage in frequent binge drinking and/or who are members of Greek life, as well as for first-year undergraduates.

We contribute to the growing knowledge about drugging by examining if there are differences between drugging victims and nonvictims. Drawing from the body of campus party culture research, there is much evidence that binge drinking, Greek-life membership, and being a first-year undergraduate may be related to drugging victimization, but no previous study has examined these relationships. Given the well-established interrelationship among these variables, their three-way interaction also may have an effect on drugging victimization rates. Therefore, it is important to examine whether and how these specific behavioral indicators of participation in the campus party culture influence rates of drugging victimization.

To explore these possible relationships, we tested the following hypotheses concerning the significant main and interaction effects of the campus party culture on students' drugging victimization rates:

H1: Those who engage in binge drinking will have a higher rate of drugging victimization compared to those who do not;

H2: Members of a Greek sorority will have a higher rate of drugging victimization compared to those who are not;

H3: First-year students will have a higher rate of drugging victimization compared to those who are not.

Given that there is a relationship among these three factors, we hypothesize a three-way interaction among the campus party culture indicators:

H4: Students who engage in binge drinking, are members of a Greek sorority, and are first-year students will have the highest rate (percentage) of drugging victimization compared to other student groups.

Methods

Sample

The current study is part of a larger longitudinal study of interpersonal violence among college students at three large, public universities located in the South and Midwest United States (see Swan et al., 2016). In 2010, enrollment data from the registrar's office at each university was used to obtain a stratified random sample of 16,000 undergraduate students, ages 18–24; 8,000 students were selected from one school and 4,000 students at each of the two other schools. This age group was used because they comprise traditionally aged undergraduates (U.S Department of Education, n.d.). Each class (first-year, sophomore, junior, and senior) represented 25% of the total sample. Within each class, each gender (male and female) comprised half the sample. In 2011, 2012, and 2013, students who completed the survey in the previous year were invited to participate in the subsequent year. In addition to this panel

of students, a random sample of 2,000 first-year undergraduates at each of the three universities also were selected to receive an invitation to participate; they replaced the nonrespondents and graduating seniors that were in the previous years' samples. In 2015, a new random sample of 5,000 undergraduates was selected from one of the three original universities. The breakdown of this sample was the same as the 2010 sample (25% from each class, and 50% from each gender).

The current study pooled the cross-sectional data collected in 2012, 2013, and 2015. The 2012 sample included first-year undergraduates, who were invited to participate in the survey for the first time (response rate = 35.9%; n = 2,285), and upper-class students (sophomores, juniors and seniors) who participated in 2011 (response rate = 47.1%; n = 2,433). The 2013 sample included only first-year undergraduates invited for the first time (response rate = 32.5%; n = 1,066). All upper-class students were excluded from the 2013 sample to avoid being in the sample twice. The sample was constructed so that half would be comprised of first-year students. The large sample of first-year students was needed to test our hypotheses about the main and interaction effects of first-year students on drugging victimization. In 2015, the two questions regarding drugging were administered to a single campus. All participants at this one campus in 2015 were included in the current study (response rate = 39.7%; n = 1,626). The total sample size pooled across all three years is N = 6,931.

Procedure

In March and April of 2012, 2013, and 2015, e-mail invitations to participate in a web-based survey about the prevention of dating violence and sexual violence were sent to selected students' e-mail addresses on file with the Registrar's Office. Following Dillman's (2007) tailored design method, students received multiple invitations: an original invitation and subsequent follow-up e-mails approximately 4–5 days apart. Each follow-up e-mail was on a different day of the week to increase the likelihood of survey completion. Students who chose to participate were instructed to click on the survey link, which opened a webpage explaining the purpose of the study and informed consent. Students could then choose to continue with the survey or to opt out. If students chose to participate, they received a $5 Amazon gift card sent to their e-mail address.

Dependent variable

Drugging victimization

Participants were asked, "Since the beginning of [this academic year's] fall term, how many times do you suspect or know that someone put a drug into your drink WITHOUT your knowledge?" Students could then choose from the following responses: "0 times," "1 time," 2 times," "3–5 times," "6 or more times," "This happened, but not since the beginning of the Fall term," or "Choose not to answer." For the purpose of the current study, responses of "This happened, but not since the beginning of the Fall term" were recoded as "0 times," and "Choose not to answer" were recoded as missing. A single dichotomous variable, "Not drugged during the current school year" (coded 0) and "Drugged at least once during the current school year" (coded 1), was created.

Independent variables

Behavioral indicators of participation in the campus party culture were measured using three survey items that assessed: (a) binge drinking, (b) membership in a Greek fraternity or sorority, and (c) class year.

Binge drinking

Binge drinking measures the number of days an individual consumed five or more alcoholic drinks at one time within the past month. Participants were asked "In the past month, on how many days did you have 5 or more drinks of alcohol in a row (within a couple of hours)?" Responses were: "I never drink,"

"0 days," "1–2 days," "3–9 days," "10–19 days," "20–31 days," and "Choose not to answer." "I never drink" and "0 days" were collapsed into a single category representing zero days binge drinking in the past month. For the descriptive analysis, given that the category "20–31 days" contained few cases (n = 74 across all the student groups) and did not differ significantly on the dependent variable (drugging victimization) from the category of "10–19 days," this category was combined with "10–19 days" to create a new category of "10–31 days." For hypotheses testing, a dichotomous variable was created, where "0" represented no days binge drinking in the past month and "1" represented at least one day binge drinking in the past month. The dichotomous binge drinking variable was necessary for testing Hypothesis 4 since the four-category binge-drinking measure broken down by Greek-life membership and class year resulted in a small number of cases in some of the cells.

Greek-life membership

Greek-life membership describes a student's membership in a Greek fraternity or sorority. Participants were asked if they are in a Greek fraternity, Greek sorority, or neither. The neither category was recoded into non-Greek male and non-Greek female using the student's reported sex. To reduce measurement error, respondents who identified as female and Greek fraternity members (n = 29) and those who identified as males and Greek sorority members (n = 4) were excluded from the analyses. Sex is not used as a control variable because its effect is taken into account in the construction of this variable. A single, four-category variable was then created with Greek fraternity = 0, Greek sorority = 1, non-Greek male = 2, and non-Greek female = 3. As with the measure of binge drinking, the "0" category, Greek fraternity, was compared to the other Greek life membership category and the two non-Greek-life membership categories.

Class year

Class year measures the student's self-reported year in school at the time of the survey. Respondents were asked to identify their current class year: freshman, sophomore, junior, senior, and other. Freshmen are considered first-year undergraduates. If a student selected other, they were prompted to describe their class year. If the description matched one of the other selections, their response was recoded to that selection. If their description could not be matched (e.g., graduate student), the respondent was excluded from the sample. All non-first-year students were combined into a single category of "upper-class student." The variable class year was coded as first-year undergraduate = 0 and upper-class undergraduate = 1.

Control variables

Race

Respondents were asked to identify their race with the question "How would you describe yourself?" Responses were: American Indian or Alaska Native, Asian, Black or African American, Hispanic or Latino/Latina, Native Hawaiian or Other Pacific Islander, White, and other. Since the vast majority of the sample identified as White, this variable was collapsed into two categories, "White" and "non-White," with White = 0 and non-White = 1. Race was controlled for due to previous research linking race both to binge drinking (Wechsler et al., 1995) and membership in Greek organizations (Hughey, 2007), with non-Whites engaging in less binge drinking and being less likely to be involved in Greek organizations.

University

Students at three universities were surveyed in 2012 and 2013. In 2015, students at only one university were asked the drugging victimization question. A single variable of university was used with Campus 1 = 0, Campus 2 = 1 and Campus 3 = 2. Campus 1 (the "0" category) was then compared to each of the other two campus categories. The effect of each university was included to account for any differences between the three universities that were not measured.

Survey year

The survey was administered in 2012, 2013, and 2015. Controlling for survey year accounted for any unobserved differences across these years.

Descriptive variable

Drugging perpetration or knowing a drugging perpetrator was assessed with one item that varied slightly by year of survey. In 2012, respondents were asked, "Since the beginning of [this academic year's] fall term, have you or someone you know put drugs in someone else's drink on purpose?" The responses included 0 times, 1 time, 2 times, 3–5 times, 6–9 times, 10 or more times, "Yes, but not since the beginning of [this year's] fall term," and "Choose not to answer." Responses of "This happened, but not since the beginning of the fall term" were recoded as "0 times," and "Choose not to answer" were recoded as missing. In 2013 and 2015, the question was worded "Have you or someone you know put drugs in someone else's drink without their knowledge?" and the responses were identical to those in the 2012 survey.

Sample characteristics

Table 1 presents the sample characteristics. The majority of the sample is female (61.5%) and White (82%). As planned in the sampling design, first-year undergraduates (50.9%) comprise half the sample, with the sample mean age of 19.5. Just over half of the students engaged in binge drinking in the past month (53.1%). The majority of students are not members of a Greek fraternity or sorority (81.2%).

Table 1. Sample characteristics.

	Total sample				Drugging victims	
Variables	N	%	M	SD	n	%
Gender						
Male	2639	38.5			103	3.9
Female	4224	61.5			317	7.6
Race						
White	5680	82.0			352	6.2
African American	444	6.4			22	5.0
Asian	305	4.4			11	3.7
Hispanic	103	1.5			6	5.8
Hawaiian/Pacific Islander	11	0.2			2	18.2
Indian/Alaskan Native	15	0.2			6	40.0
Other	273	3.9			17	6.3
Class year						
First year	3526	50.9			266	7.6
Sophomore	1657	23.9			77	4.7
Junior	915	13.2			50	5.5
Senior	719	10.4			29	6.9
Greek life Membership						
Fraternity	411	5.9			23	5.6
Sorority	889	12.8			124	14.1
Non-Greek male	2310	33.3			84	3.7
Non-Greek female	3321	47.9			196	6.0
Engaged in binge drinking in past month						
No	3219	46.9			69	2.2
1–2 days	1764	25.7			114	6.5
3–9 days	1456	21.2			160	11.1
10–31 days	430	6.3			75	17.6
Age			19.5	1.2		

Analytic strategy

Generalized linear models (GLM) adjusted for the three control variables were estimated and marginal drugging victimization rates (percentages) were assessed to test our hypotheses; robust estimators were used to provide a consistent estimate of the covariance. A binary logistic GLM was chosen because this model allowed for a dichotomous dependent variable. GLM allows for the use of a multicategory variable by comparing the reference category (coded 0) to each of the other categories of the variable, allowing for the comparison between each pair of categories (see, for example, descriptions of binge drinking, Greek-life membership and university).

To test the effects of the three party culture variables on drugging victimization, we examined the statistical significance of each variable in the GLM model, in addition to the marginal drugging victimization rates (percentages) for each category of each of the three campus party culture variables (binge drinking, Greek life membership and class year). To test if there is a significant difference between any of the categories, an omnibus chi-square test was performed; this test does not show which categories are significantly different from each other, but determines whether there is a difference somewhere among the categories.

GLM was further used to assess the significance of the three-variable interaction term on the marginal drugging victimization rates (percentages) and to test whether the interaction among these campus party culture measures resulted in higher rates (percentages) of drugging victimization for the different groups of students. One-tailed proportions tests were performed to compare the percentage of drugging victims for each pair of the eight student groups (i.e., Greek membership status and class year) within the two binge-drinking categories (0 days, 1 or more days), for a total of 116 comparisons (e.g., percentage of first-year Greek sorority members who binge drank 1 or more days in the last month and who were drugging victims compared to the percentage of non-Greek first-year females who binge drank 1 or more days in the last month and who were drugging victims). The model fit of each estimated GLM was assessed. Analyses were performed using SPSS version 24 and Stata version 12. Significance was assessed at $p < .10$, due to small cell sizes.

Results

Descriptive findings

Overall, 6.16% of the sample ($n = 427$) had been drugged in the past academic year (i.e., from when the current fall term started to when the survey was administered in the following spring term). Of these, 342 (80.09%) had experienced a drugging victimization once, 52 (12.18%) had experienced a drugging victimization twice, 21 (4.92%) had experienced a drugging victimization three to five times, and 12 (2.81%) had experienced at least six drugging victimizations in the past academic year. In total, the 427 drugging victims experienced 574 drugging victimization incidents, with repeat victims experiencing 41.6% of all the incidents. A total of 122 respondents either knew a drugging perpetrator, or were a perpetrator themselves in the past academic year. Of these, 49, or 40.16%, knew or were repeat perpetrators (knew someone who drugged someone at least twice, or drugged someone themselves at least twice). Although a slightly higher percent of fraternity members (2.46%, compared to 2.16% of sorority members, 1.75% of non-Greek males, and 1.37% of non-Greek females) either knew a perpetrator or were a perpetrator themselves in the past academic year, there were no significant differences among these groups. Similarly, a slightly higher percentage of individuals who binge drank in the past month knew a perpetrator or were a perpetrator themselves (2.31%, compared to 0.99% of non-binge drinkers), however, these differences did not reach statistical significance. Finally, 1.80% of first-year students knew or were a perpetrator, compared to 1.57% of upper-class students, but this difference also was not significant.

Multivariate GLM findings

We hypothesized that those who participated in the campus party culture would have a higher rate of drugging victimization than those who did not participate. Controlling for race, university, and survey year, the omnibus chi square tests provided preliminary support for the three hypotheses concerning binge drinking, $\chi^2(1) = 337.694$; $p < .001$, Greek-life membership, $\chi^2(3) = 830.022$; $p < .001$, and class year, $\chi^2(1) = 204.940$; $p < .001$. These results show that the percentage of drugging victimization was significantly different among the different categories of each variable, when comparing the lowest value category and at least one other category of that variable. The omnibus chi-square test, however, only shows that there is a difference among categories within the respective variable; it does not test which pair of categories significantly differed from one another. Additionally, each of the three control variables were significant in the model: survey year $\chi^2(1) = 3.628$; $p = .057$; university $\chi^2(1) = 4.061$; $p = .044$; race $\chi^2(1) = 3.951$; $p = .047$. The overall model fit was also significant, $\chi^2(15) = 458.934$, $p < .001$.

To explicitly test which categories of each campus party culture variable differed significantly, pairwise comparisons of the marginal percentages were made. Figure 1 displays the percentage of students who experienced drugging victimization for each category of these three indicators of campus party culture participation. Looking at Figure 1, the pairwise comparisons of marginal percentages show that a significantly higher percentage of those who binge drank 10–31 days in the last month were drugging victims (18.97%) compared to those who binge drank 3–9 days (11.36%; z = −2.23; $p = .013$), 1–2 days (6.79%; z = −2.56; $p = .005$), or who did not binge drink (2.24%; z = −1.58; $p = .057$). A significantly higher rate of sorority members (14.99%) were drugging victims compared to fraternity members (4.92%; z = −1.30; $p = .097$), non-Greek males (5.14%; z = −2.23; $p = .013$), and non-Greek females (9.19%; z = −1.59; $p = .056$). Finally, the difference between first-year students (9.27%) who were drugging victims and their upper-class counterparts (6.47%; z = −1.01; $p = .156$) was not significant.

We hypothesized that, in addition to significant main effects of the campus party culture variables, there would be an interaction effect between binge drinking, Greek-life membership, and class year on drugging victimization. Supporting this hypothesis, the three-way interaction between the campus party culture participation variables also was statistically significant, $\chi^2(3) = 1214.491$; $p < .001$, as was the overall model fit, $\chi^2(18) = 309.531$; $p < .001$. Figure 2 displays the effects of this interaction term on the percentage of drugging

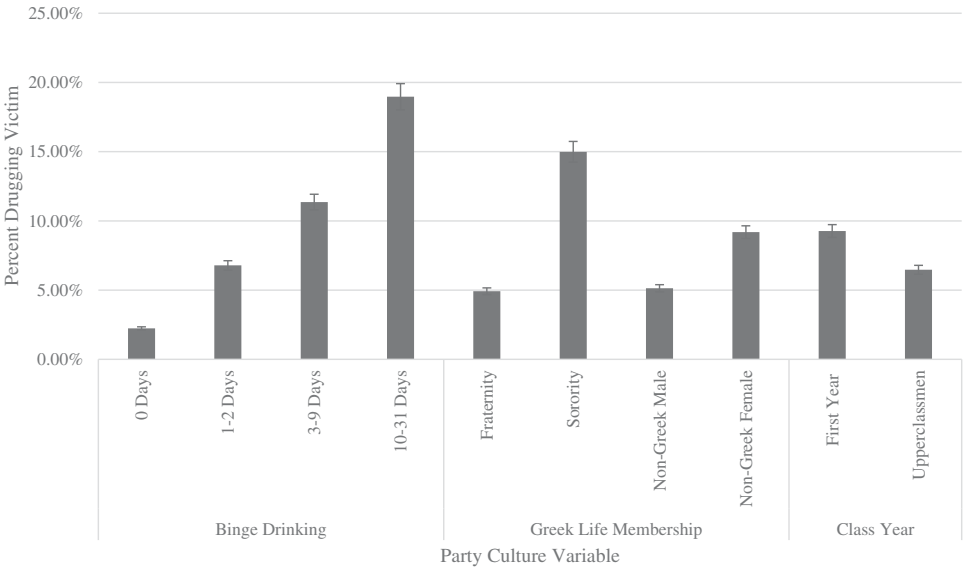

Figure 1. Main effects of party culture variables on drugging victimization.

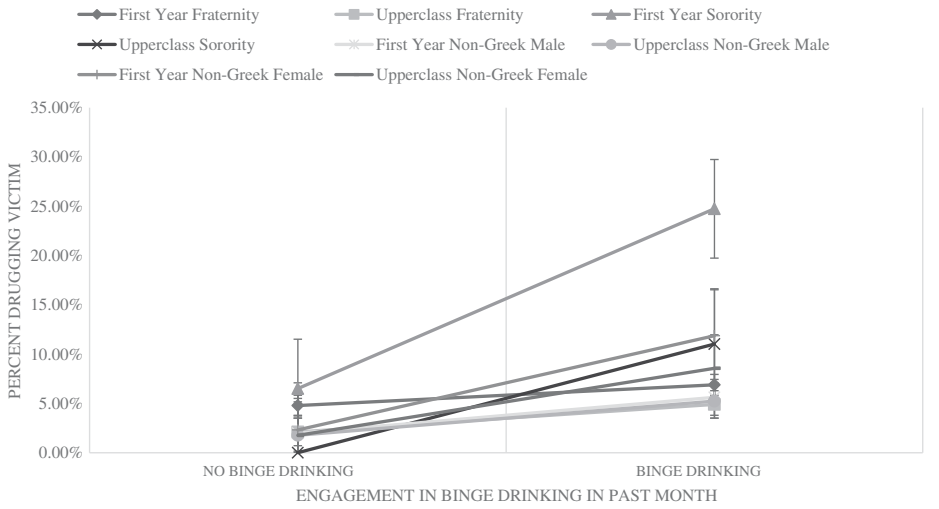

Figure 2. Three-way interaction among binge drinking, Greek life membership, and class year on drugging victimization rate.

victims. The categories of students by their year in school and Greek membership status are depicted across the two binge drinking categories on the X-axis. The Y-axis shows the percentage of drugging victims in the past academic year. Their respective percentages of drugging victims did not significantly differ from the other student groups, except first-year sorority members as noted next.

As Figure 2 displays, compared to all other student groups, a significantly higher percentage of first-year sorority members were drugging victims in the past academic year. The percentage of drugging victims among first-year sorority women who binge drank at least one day in the last month was significantly higher than every student category regardless of binge drinking status. Among first-year sorority women who binge drank at least once in the past month, 24.74% were a victim of drugging, compared to the next highest percentage of drugging victims, first-year non-Greek females (11.86%).

Due to small cell sizes, it was not possible to test the three-way interaction of Greek life membership, year in school, and binge drinking across all four levels of binge drinking (0 days, 1–2 days, 3–9 days, 10–31 days). However, descriptive findings show a pattern of increasing drugging victimization as the number of days spent binge drinking increases, especially for first-year sorority members. For example, 6.53% of first-year sorority members who engaged in no binge drinking in the past month were drugged, compared to 15.67% at 1–2 days binge drinking, 27.63% at 3–9 days, and 39.14% at 10–31 days.

Discussion and conclusion

This study contributes to the nascent but growing body of research on drugging victimization by considering this phenomenon specifically in relation to the campus party culture. Supporting our hypotheses, results indicated that undergraduates who engage in binge drinking, are members of a Greek sorority, or are first-year students had higher rates of drugging victimization than their counterparts who do not engage in binge drinking, are not Greek sorority members, and are not first-year undergraduates. We postulated that each of these variables are related to party culture, with binge drinking as a behavioral indicator of participation in party culture, and a greater likelihood of participation in party culture if one is a first-year student or a member of a sorority or fraternity. Specifically, there were significantly higher percentages of drugging victimization for students who spent at least one day binge drinking in the last month compared to those who did not engage in binge drinking, for sorority members compared to fraternity members or non-Greeks, and for first-year students compared to all other class years.

Our final hypothesis was that there would be an interaction effect between binge drinking, Greek life-membership, and first-year status on drugging victimization. This three-way interaction among the party

culture variables was statistically significant. The finding was driven largely by the much higher rates of drugging victimization for first-year sorority members. The prevalence of drugging for first-year sorority members rose steeply when taking into account binge drinking; nearly 25% of women in this group who binge drank at least once in the last month were victims of drugging. These findings suggest that there are unique factors contributing to the much higher rates of victimization for first-year sorority women, particularly those who engage in binge drinking, at these three universities. While we do not know exactly what these factors are, we can draw from previous studies that strongly suggest that attending fraternity parties is highly related to various forms of victimization for college women (Adams-Curtis & Forbes, 2004; Boswell & Spade, 1996; Mustaine & Tewksbury, 2000). Previous studies have found that sorority women are more likely to attend fraternity parties and to binge drink (Franklin, 2016; Minow & Einolf, 2009). In particular, first-year students who are recruited for membership in and pledge a sorority attend many parties and activities during the rush period. Increased exposure to the campus party culture through these activities may establish a social norm that the party culture is an expected part of college, especially Greek life, and may provide opportunities for binge drinking, and, potentially, for victimization, including drugging (Kuh & Ardold, 1993; Nuwer, 1999).

Other factors related to the relationships between fraternities and sororities may also increase risk of victimization for first-year sorority members. Wechsler et al. (2009) found that while many fraternity binge-drinkers began binge drinking in high school and therefore are experienced drinkers by their first year of college, many sorority members do not begin binge drinking until they begin college. Inexperienced drinkers may be more vulnerable to binge drinking due to the lack of knowledge about the effects of alcohol consumption. Coupled with the heavy party culture of many fraternities are negative attitudes toward women that, unfortunately, may be a component of fraternity culture (Boswell & Spade, 1996; Boyle & Walker, 2016; Schwartz & Pitts, 1995). Taken together, these findings suggest that there is a "perfect storm" of factors for first-year sorority women who participate in the heavy drinking that is endemic to party culture—and many of these party culture factors converge at fraternity parties. Clearly, more research that directly examines the role of these various aspects of party culture and fraternity culture, and their relationship to drugging, is needed.

Overall, results from this study indicate that risk of drugging victimization is related to campus party culture, conceptualized here as binge drinking as well as membership in groups that have a higher rate of participation in party culture: fraternity and sorority organizations and first-year students. This study provided evidence that all three of these factors are important in understanding which students are at greatest risk of drugging victimization. Furthermore, this study extends past research on drugging victimization by contextualizing the circumstances that place students at greatest risk, as well as identifying a group that shows a uniquely high level of risk for this form of victimization, namely first-year sorority members, particularly those who engage in binge drinking.

Despite the advances made in the current study, there is still much to be learned about drugging victimization. This study had several limitations that require discussion so that future researchers can address them. First, although the inclusion of three universities in our survey makes this study one of the largest explorations of drugging victimization to date, there remains no national estimate of drugging victimization. The findings for these three universities may not be generalizable to students enrolled in other types of universities or colleges.

A second limitation was that, despite our overall large sample, our study was limited in power by the relatively small number of fraternity members in the sample, and the very small proportion of fraternity members who experienced drugging victimization. We did not find that fraternity membership was related either to drugging victimization or perpetration, despite the well-supported finding that a high proportion of fraternity members frequently engage in party culture (Foster, Bass, & Bruce, 2011; Presley et al., 1993; Wechsler et al., 2009; Weiss, 2013; Workman, 2001). We are unable to draw reliable conclusions regarding the relationship between fraternity membership and drugging victimization or perpetration, due to the small number in this group. A fruitful step for future studies would be to examine drugging with a larger sample of fraternity members as compared to non-member men, sorority women, and nonmember women.

A third limitation is that we do not know if the individuals who indicated that they were victims of drugging were actually drugged. It is certainly possible that some respondents simply drank more than they realized, or drank a stronger type of alcohol than they were used to. It is also possible that some participants were not aware that a prescription or over-the-counter drug they were taking could amplify the effects of alcohol (Elliott & Burgess, 2005). However, we also found that 113 participants (1.7%) either drugged someone or knew someone who drugged another person. This finding gives us confidence that at least some of our drugging victims were, in fact, drugged, and did not simply misperceive the effects of alcohol consumption.

Implications for policy and program development

Despite these limitations, results from this study offer some initial suggestions for practical policy developments that practitioners can make use of moving forward to reduce drugging victimization on college campuses. First, results suggest that information on drugging victimization and evidence-informed risk factors should be included in the development of training and educational materials for college students, and that special attention should be focused on entering first-year students as well as on students pledging fraternities and sororities. Rather than simply encouraging students to keep an eye on their drinks, practitioners can use these results to inform students and other university personnel about who is most at risk for drugging victimization and in what contexts. Second, other studies have indicated that drugging and sexual assault are related, as are drugging and other forms of crime, such as robbery (Swan et al., 2016). Raising awareness about the empirically documented risk factors for drugging victimization may help to curb additional crimes that occur in conjunction with drugging, and thereby help to reduce the overall campus crime rate.

Future research can expand further upon our knowledge of drugging in several ways. First, future studies should consider repeat drugging victimization, as well as the relationship between repeat drugging victimization and the campus party culture. Second, studies should look at the contribution of drugging victimization to poly victimization—that is, experiencing two or more different types of victimization. Third, the relationship between drugging perpetration and the campus party culture should be considered. Finally, future research should examine the relationship between the campus party culture and other forms of victimization, including crimes that predominate among college students (e.g., physical and sexual assault, larceny/theft), to determine whether there is a perfect storm for those types of crimes as well.

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