Sexual Assault History and Its Association With the Use of Drinking Protective Behavioral Strategies Among College Women

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ABSTRACT. Objective: The current study examined the relationship between sexual assault history and drinking protective behavioral strategies (PBS). Given the relationship between sexual assault history and alcohol use, we hypothesized that after we controlled for drinking behavior, women with a childhood sexual abuse (CSA) history would use fewer drinking PBS than those without a CSA history. We also hypothesized that a history of adolescent/adult sexual assault (ASA) involving incapacitation and force would be associated with lower use of drinking PBS after controlling for CSA history and drinking behavior. **Method:** A total of 800 undergraduate college women completed a survey online. **Results:** Regression analyses indicated that the only sexual assault history type that was consistently related to all three

types of drinking PBS was ASA involving incapacitation. Women with a history of incapacitated ASA were less likely to use any type of drinking PBS than women without such history. A history of other types of sexual assault (CSA, physically forced ASA, and verbally coerced ASA) was associated only with lower use of serious harm-reduction drinking PBS, such as going home with a friend or knowing the location of your drink. **Conclusions:** This was the first study to examine the relationship between different sexual assault histories and drinking PBS, and it furthers our understanding of the relationship between alcohol and sexual assault. Possible reasons for this relationship between ASA and PBS use are discussed. (*J. Stud. Alcohol Drugs*, 76, 459–464, 2015)

COLLEGE WOMEN ARE AT HIGH RISK for sexual assault, with prevalence estimates as high as 75% (Abbey et al., 2005). Alcohol is consistently associated with sexual assault (e.g., Abbey et al., 2004; Testa & Livingston, 2009). Approximately 50% of sexual assaults involve alcohol consumption by the victim, the perpetrator, or both (Abbey et al., 2004). The association between drinking and sexual assault is reciprocal. Women with a sexual assault history drink more in general and also engage in more heavy episodic drinking (Miller & Downs, 1995; Ullman, 2003; Wilsnack et al., 2004), putting them at increased risk for sexual re-assault (Gidycz et al., 2007; Testa et al., 2010). The use of drinking protective behavioral strategies (PBS; e.g., alternating alcoholic and nonalcoholic drinks) has been associated with decreased alcohol use and risk of alcohol-related negative consequences (Dimeff et al., 1999; Kulesza et al., 2010; Larimer & Cronce, 2007; Lewis et al., 2010, 2011). Although preliminary evidence suggests that a sexual assault history is associated with not using drinking PBS (Palmer et al., 2010), it is not known whether different types of sexual assault (i.e., childhood vs. adolescent/adult assault and the perpetra-

tors' tactics) differentially predict the use of PBS subtypes. Therefore, the current study sought to further examine the relationship between a sexual assault history and drinking PBS by examining both childhood sexual abuse (CSA) and adolescent/adult sexual assault (ASA) history by tactic type and subtypes of PBS, after drinking was controlled for.

Sexual assault type, alcohol use, and drinking protective behavioral strategies

Women with a sexual assault history are more likely to engage in heavy and problematic drinking than their non-victimized counterparts (for a review, see Ullman, 2003). Results from a nationally representative sample found that women with CSA were twice as likely to report heavy episodic drinking (defined in this study as six or more drinks per day) and were significantly more likely than nonabused women to drink to intoxication, experience alcohol-related problems, and endorse symptoms of alcohol dependence (Wilsnack et al., 1997). Women with an ASA history were more likely to report heavy episodic drinking and greater alcohol quantity than those with no assault history (for a review, see Ullman, 2003). However, reports of the associations between ASA and subsequent alcohol use are not consistent (Messman-Moore et al., 2009; Mouilso et al., 2012; Thompson et al., 2008; Ullman et al., 2009; Walsh et al., 2012). Moreover, different types of ASA experiences have been differentially associated with alcohol consumption. For instance, ASA experiences that involved the use of

Received: June 27, 2014. Revision: December 3, 2014.

Data collection and manuscript preparation were supported by National Institute on Alcohol Abuse and Alcoholism Grants R21AA016211 (principal investigator: Debra Kaysen) and F31AA020134 (principal investigator: Amanda K. Gilmore).

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incapacitation (i.e., being too intoxicated or passed out to give consent), threats of force, or actual use of force have been associated with heavier drinking (Kaysen et al., 2006; Mohler-Kuo et al., 2004). Because CSA and ASA histories are consistently associated with heavy drinking, and heavy drinking is associated with less use of drinking PBS, it stands to reason that CSA and ASA histories would also be associated with less use of drinking PBS.

Drinking PBS have been categorized as strategies intended to either limit or stop drinking (e.g., not exceeding a certain number of drinks), alter the manner of drinking (e.g., drinking slowly rather than gulping or chugging), or reduce serious harm (e.g., going home with a friend, knowing where your drink is at all times; Martens et al., 2005). College women often report greater use of serious harm-reduction strategies compared with limiting/stopping drinking or altering the manner of drinking (Benton et al., 2004). It has been suggested that women use more drinking PBS because they are at higher risk for experiencing negative consequences (e.g., sexual assault) from drinking in social situations, and therefore the greater use of serious harm-reduction drinking PBS may actually serve as protective strategies for sexual assault risk (Delva et al., 2004). However, only one known study has examined the relationship between sexual assault and drinking PBS. In that study, Palmer et al. (2010) examined sexual assault in the past year, combining a wide range of outcomes from sexual contact to completed penetration across all types of tactics (i.e., coercion, incapacitation, threats, or physical force). Participants with a sexual assault history were less likely to endorse use of drinking PBS compared with participants without a sexual assault history, after gender was controlled for. This study suggests that there may be a link between sexual assault and drinking PBS; however, more research is needed to examine the effects of a history of CSA, as well as different types of ASA experiences, on the use of drinking PBS.

No known studies have examined the influence of sexual assault history on the use of different types of drinking PBS. Given that certain drinking PBS are related to lower alcohol use (Larimer et al., 2007), understanding the association between CSA and ASA histories and use of the different types of drinking PBS may inform intervention and prevention efforts to reduce drinking and negative consequences among women with a sexual assault history. Specifically, it would be important to know what types of sexual assault histories are associated with the different types of drinking PBS in order to guide intervention efforts and identify potential treatment targets.

Current study

The current study examined the relationship between a history of CSA and different ASA types and use of different drinking PBS. Emerging research suggests that increased

alcohol use is related to ASA experiences that involve use of incapacitation and force tactics, which highlights the importance of examining different types of sexual assault experiences in relation to the use of PBS. This study focused on a high-risk sample for sexual assault experiences by including only women who engaged in heavy episodic drinking (i.e., consuming four or more drinks in 2 hours; National Institute on Alcohol Abuse and Alcoholism, 2004) twice in the past month. Given that the relationship between CSA and alcohol use is consistent in the literature, we hypothesized that women with a CSA history would use fewer drinking PBS than women without such history, after controlling for alcohol use. Women with a CSA history are at increased risk for experiencing an ASA (for a review, see Ullman, 2003), and reports of the association between ASA and subsequent alcohol use are inconsistent (Messman-Moore et al., 2009; Thompson et al., 2008; Ullman et al., 2009; Walsh et al., 2012). Thus, it is possible that CSA accounts for the majority of the variance in the relationship between ASA and drinking PBS. Given that some types of ASA (including those involving incapacitation or force) are related to increased alcohol use, we hypothesized that women with a history of ASA involving incapacitation and force would use fewer drinking PBS than those without such histories, above and beyond the association between CSA and drinking PBS. This would allow us to assess whether the recency of the traumatic experience is important in women's current use of drinking PBS. Because of the lack of previous research on the relation between CSA and ASA and drinking PBS subtypes, we did not have specific hypotheses for these associations and only explored different drinking PBS subtypes if overall drinking PBS was related to CSA and ASA.

Method

Participants and procedures

Data for the current research were taken from a larger study on the daily assessment of posttraumatic stress and alcohol use at a large public university in the Pacific Northwest. The university's institutional review board approved all study procedures. Over the course of 2 years, a random sample of 11,544 undergraduate women was obtained from the university registrar's office and recruited through mail and email. These women were invited to complete an online screening questionnaire via email and U.S. mail to determine their eligibility for the study (described in Kaysen et al., 2014). Of the students who completed the screening survey ($n = 4,342$; 37.6%), 860 (20%) met the study criteria of (a) consuming four or more drinks on one occasion at least twice in the past month, and (b) either reporting no history of trauma exposure or reporting sexual victimization (at least one incident of CSA or ASA before the past 3 months) and completed an online baseline assessment. Of those, 800

(93.0%) provided data on the measures of interest for the present study and were included in the current analyses. Participants were 20.4 years old on average ($SD = 1.8$). Ethnicity of the sample was 70.5% White, 16.8% Asian, 1.1% Black/African American, 8.5% multiracial, and 3.1% other or unknown. A small proportion of the sample (5.5%) was Hispanic. At the time participants completed the screening, 16.3% were freshmen, 18.6% were sophomores, 29.4% were juniors, 35.0% were seniors, and 0.7% did not provide class standing.

Measures

Childhood sexual abuse. The Childhood Victimization Questionnaire (Finkelhor, 1979) was used to measure CSA victimization before age 14 perpetrated by someone 5 or more years older. A list of 11 coerced or forced sexual experiences, ranging from a sexual invitation to intercourse, was presented to participants. Participants responded with 1 = yes and 0 = no to indicate if any of the experiences had happened to them. If participants responded positively to any item, they were coded as having a CSA history (0 = no CSA history, 1 = CSA history).

Adolescent/adult sexual assault. The Sexual Experiences Survey was used to assess ASA after age 14 (Koss & Gidycz, 1985; Koss & Oros, 1982). ASA was assessed using three non-mutually exclusive categories: sexual assault involving verbal coercion, incapacitation, and physical force. Participants were asked if they had experienced oral, vaginal, or anal sex “when you didn’t want to because you were overwhelmed by someone’s continual arguments and pressure” or “when you didn’t want to because someone used his/her position of authority (boss, teacher, camp counselor, supervisor) to make you” to assess sexual assault involving verbal coercion. Participants were asked if they had experienced oral, vaginal, or anal sex “when you didn’t want to because you were incapable of giving consent or resisting due to alcohol or drugs” to assess sexual assault involving incapacitation. Participants were asked if they had experienced oral, vaginal, or anal sex “when you didn’t want to because he/she threatened or used some degree of physical force (twisting your arm, holding you down, etc.) to make you” to assess sexual assault involving physical force. Participants responded with 1 = yes or 0 = no to each experience.

Alcohol use. The average number of drinks per week participants consumed was assessed using the Daily Drinking Questionnaire (Collins et al., 1985). For the typical week in the past 3 months, participants reported the number of days per week that they drank as well as the number of drinks they consumed each day of the week. A total drinks-per-week score was computed by summing the number of drinks reported for each day of the typical week.

Drinking protective behavioral strategies. The Protective Behavioral Strategies Survey (Martens et al., 2005),

TABLE 1. Means and standard deviations (SD) of alcohol use and drinking PBS

Variable	$M (SD)$
Drinks per week	11.14 (7.34)
Total drinking PBS	2.33 (0.68)
Drinking PBS subscales	
Limiting/stopping drinking	1.85 (0.97)
Manner of drinking	2.18 (0.91)
Serious harm reduction	3.76 (1.10)

Note: PBS = protective behavioral strategies.

a 15-item questionnaire examining behavioral strategies individuals engage in after drinking or “partying,” was used in this study. Response options were measured on a Likert-type scale ranging from 1 (*no, never*) to 5 (*always*). The 15 items were averaged together for a total score, with higher scores indicative of greater overall PBS use ($\alpha = .81$). We also calculated averages for each of the three subscales that represented limiting/stopping drinking behaviors ($\alpha = .80$; e.g., “determine not to exceed a certain number of drinks”), manner of drinking behaviors ($\alpha = .62$; e.g., “avoid trying to ‘keep up’ or out-drink others”), and serious harm-reducing behaviors ($\alpha = .49$; e.g., “make sure you go home with a friend”).

Results

A total of 250 (31.25%) women reported a history of CSA, and 597 (74.63%) endorsed a history of ASA. A total of 88 participants reported a history of CSA only, 435 reported a history of ASA only, 162 reported a history of both CSA and ASA, and 115 reported no CSA or ASA history. Of those who reported ASA, 406 (50.8%) reported verbally coerced ASA, 370 (46.3%) experienced incapacitated ASA, and 117 (14.6%) reported threat of force or physically forced ASA. Means and standard deviations are presented in Table 1, and correlations are presented in Table 2.

Before conducting our primary analyses, we used preliminary analyses to examine whether key demographic variables should be controlled for in subsequent regression analyses. There was no significant correlation found between age and total use of drinking PBS ($r = .067, p = .058$); no difference among ethnic/racial groups on total use of drinking PBS, $F(5, 795) = .547, p = .740$; and no difference for participants’ year in college on total use of drinking PBS, $F(3, 790) = 1.29, p = .277$. Therefore, these factors were not included in subsequent analyses. To assess the relationship between sexual assault history and the total drinking PBS, a hierarchical regression model was conducted. Typical drinks per week was added to the first step of the model to control for current alcohol use, CSA history was added to the second step of the model to assess the relationship between CSA history and use of drinking PBS, and the three ASA tactic types (verbally coerced, incapacitation, and threat of

TABLE 2. Correlations of drinking, sexual assault history, and use of drinking PBS

Variables	1.	2.	3a.	3b.	3c.	4.	4a.	4b.	4c.
1. Drinks per week	1.00								
2. CSA	.029	1.00							
3. ASA type									
3a. Verbal coercion	.022	-.026	1.00						
3b. Incapacitation	.155**	-.074*	.061	1.00					
3c. Threat/physical force	.127**	.133**	.146**	.113**	1.00				
4. Drinking PBS total	-.244**	-.016	-.069*	-.135**	-.059	1.00			
4a. Limiting/stopping	-.186**	.018	-.037	-.097**	-.013	.817**	1.00		
4b. Manner of drinking	-.255**	-.002	-.026	-.112**	-.012	.732**	.412**	1.00	
4c. Serious harm reduction	-.078*	-.089*	-.126**	-.090*	.121**	.560**	.376**	.170**	1.00

Notes: PBS = protective behavioral strategies; CSA = childhood sexual abuse; ASA = adult/adolescent sexual assault.

* $p < .05$; ** $p < .01$.

force or physically forced) were added to the final step of the model to examine whether ASA types were associated with drinking PBS above and beyond typical drinking and CSA history. The number of drinks per week and incapacitated ASA were significantly negatively related to the total use of drinking PBS (Table 3).

Given that there was a relationship between sexual assault history and drinking PBS, we examined each of the three drinking PBS subscales (Limiting/Stopping Drinking, Manner of Drinking, and Serious Harm Reduction) using separate hierarchical regression models identical to the one described above for the total drinking PBS (Table 4). After we controlled for drinking, CSA was significantly associated with less use of serious harm-reduction PBS. After we controlled for both drinking and CSA, verbally coerced ASA and threat of force or physically forced ASA were also associated with less use of serious harm-reduction PBS. Last, after we accounted for drinking and CSA, incapacitated ASA was negatively associated with all three PBS types: limiting/stopping, manner of drinking, and serious harm reduction. A history of CSA, verbally coerced ASA, and threat of force or physically forced ASA were not associated with the use of limiting/stopping drinking or manner of drinking PBS.

Discussion

This is the first study to examine the relationship between drinking PBS and different sexual assault types. Our hypotheses were partially supported. We hypothesized that after we controlled for drinking behavior, women with a CSA history would use fewer drinking PBS than those without a CSA history. This hypothesis was supported in serious harm-reduction PBS and was not supported with overall drinking PBS or with limiting/stopping drinking or manner of drinking PBS. In addition, we hypothesized that women with ASA involving incapacitation or force would be associated with lower use of drinking PBS, even after controlling for CSA and drinking. It is interesting to note that the only sexual assault type consistently related to all drinking PBS types was ASA involving incapacitation. Women with inca-

pacitated ASA were less likely to use any type of drinking PBS than women without such history. Other types of sexual assault (CSA, physically forced ASA, and verbally coerced ASA) were associated only with lower use of serious harm-reduction drinking PBS (e.g., going home with a friend or knowing the location of your drink).

All types of sexual assault were associated with lower use of serious harm-reduction drinking PBS. This finding may be a function of the measurement of this construct. The questions on this subscale include "make sure that you go home with a friend" and "know where your drink has been at all times," which are strategies that could also serve to reduce the risk of incapacitated sexual assault, although this has never been explicitly examined. Making sure that you go home with a friend ensures that you are not going home with a man that you met at a party, thus decreasing your sexual assault risk. Knowing where your drink has been at all times decreases the likelihood of having someone slip a drug into your drink, thus decreasing your sexual assault risk. Limiting/stopping drinking and manner of drinking measure specific strategies to decreasing the likelihood of achieving a high level of intoxication, potentially explaining why there was only a relationship between this strategy and alcohol-involved ASA. Future research should examine whether serious harm-reduction drinking PBS are associated with decreased risk of sexual assault. Our data suggest that

TABLE 3. Drinking, CSA history, and ASA history (by tactic type) predict the overall use of drinking PBS

Step	Total drinking PBS		
	<i>b</i>	<i>R</i> ²	ΔR^2
1. Total drinks per week	-0.02***	.06***	
2. CSA	-0.01	.06***	.00
3. ASA type		.07***	.01
Verbal coercion	-0.07		
Incapacitation	-0.13**		
Threat/physical force	-0.02		

Notes: CSA = childhood sexual abuse; ASA = adolescent/adult sexual assault; PBS = protective behavioral strategies.

** $p < .01$; *** $p < .001$.

TABLE 4. Hierarchical regression models predicting the use of drinking PBS subscales

Step	Drinking PBS subscales								
	Limiting/stopping PBS			Manner of drinking PBS			Serious harm-reduction PBS		
	<i>b</i>	<i>R</i> ²	ΔR^2	<i>b</i>	<i>R</i> ²	ΔR^2	<i>b</i>	<i>R</i> ²	ΔR^2
1. Total drinks per week	-0.03***	.03***		-0.03***	.07***		-0.01*	.01*	
2. CSA	0.05	.04***	.01	0.01	.07***	.00	-0.21*	.01**	.00
3. ASA type		.04***	.00		.07***	.00		.04***	.03
Verbal coercion	-0.06			-0.04			-0.25**		
Incapacitation	-0.13*			-0.14*			-0.16*		
Threat/physical force	0.06			0.08			-0.24*		

Notes: PBS = protective behavioral strategies; CSA = childhood sexual abuse; ASA = adolescent/adult sexual assault.

p* < .05; *p* < .01; ****p* < .001.

it would likely be useful for both sexual assault and alcohol use risk-reduction programs to include the teaching of serious harm-reduction drinking PBS.

The finding that, compared with any other type of sexual assault history, incapacitated ASA was related to the use of fewer drinking PBS may help elucidate inconsistent findings on the relationship between ASA and alcohol use (e.g., Mouilso et al., 2012; Thompson et al., 2008; Ullman et al., 2009; Walsh et al., 2012). Although the analyses in the current study cannot explain the inconsistencies, there are a couple of potential explanations. First, it is possible that individuals who experienced an incapacitated ASA were more likely to engage in drinking in an attempt to cope with trauma-related symptoms and distress (Ullman, 2003) compared with those who had not experienced incapacitated ASA. Subsequent to the trauma, these individuals may reduce their use of drinking PBS because they want to achieve high levels of intoxication to cope with trauma-related distress. Further, it is common for individuals to report feeling a loss of control following a traumatic event, including sexual assault (Olf et al., 2007). To the extent that a woman endorses this belief, she may reduce her use of drinking PBS because she may not believe in her ability to prevent bad things from happening to her. This article does not speak to understanding why these relationships between ASA and use of drinking PBS exist; rather, it is a first step in understanding these relationships. Future research should examine potential mechanisms to better understand these relationships, including motivations to drink to cope, perceived usefulness of drinking PBS, and impulsivity associated with drinking.

These data are cross-sectional, and therefore we cannot assume the direction of the association. Some ASA experiences involving incapacitation could have overlapped with current use of drinking PBS. Given that incapacitated ASA is related to use of fewer drinking PBS of all types, it may be useful to teach drinking PBS strategies to individuals with an incapacitated ASA history using targeted intervention. Re-assault rates for ASA are high, and teaching drinking PBS could be one way to intervene with sexual re-assault involving incapacitation. Future research should assess these relationships longitudinally to gain a better understanding of

the directionality and possible bidirectionality of these relationships to inform targeted intervention and risk-reduction programs.

Strengths, limitations, future directions, and implications

This is the first study to examine the relationship between women's types of sexual assault histories and different drinking PBS. In addition to examining the association between CSA and drinking PBS, we examined the effects of ASA over and above a CSA history to help elucidate potential recency effects of sexual assault on drinking PBS. Given the high sexual re-assault rates, it was not clear in the literature if CSA accounts for the relationship between sexual assault and drinking PBS. We further explored this relationship to gain a better understanding of the association between sexual assault and drinking PBS. Participants in this study without a sexual assault history had not experienced any other criterion A traumas; this controlled for the potential effect of other traumas on drinking PBS in that group of women. This also limits the generalizability of the findings in that many individuals without a sexual assault history may have other criterion A traumas; therefore, the comparison group, albeit well controlled, may not be representative of the general population. Further, those with a sexual assault history may have experienced other traumas, and as a result drinking PBS may be related to not just sexual trauma in those who experienced a sexual assault.

Additional limitations include the fact that our sample was limited to heavy drinking female college students. Use of drinking PBS in this population may differ from non-heavy drinking female college students. Therefore, caution must be used when generalizing these results to a larger population. In addition, only 37.6% of all the individuals invited to participate in the study completed the screening survey. It is a strength of this study that a random sample from the university was used for recruitment; however, the final sample is limited to those who chose to participate and may not be generalizable to the larger college population. Future research should target a more diverse sample that includes non-college students.

These findings have implications for alcohol use reduction and sexual assault risk-reduction programs for college women. Teaching drinking PBS may reduce the risk of sexual assault. It also may be possible that teaching drinking PBS to women with a sexual assault history could decrease their risk of re-assault not only by decreasing their level of intoxication but also by teaching two overlapping strategies: going home with friends and knowing where one's drink is at all times.

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