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Understanding Sexual Assault Risk Perception in College: Associations Among Sexual Assault History, Drinking to Cope, and Alcohol Use

Elizabeth C. Neilson^{1,2}, Elizabeth R. Bird², Isha W. Metzger³, William H. George², Jeanette Norris⁴, and Amanda K. Gilmore⁵

²Department of Psychology, University of Washington, Seattle, WA

³Department of Psychology, University of Georgia, Athens, GA

⁴Alcohol and Drug Abuse Institute, University of Washington, Seattle, WA

⁵National Crime Victims Research & Treatment Center, Department of Psychiatry and Behavioral Science, Medical University of South Carolina, Charleston, SC

Abstract

Introduction—Sexual assault history and alcohol use are associated with higher likelihood of subsequent sexual assault. Alcohol use and drinking to cope are associated with re-assault, but it is unclear whether these factors are associated with malleable constructs like sexual assault risk perception. This study examined typical weekly drinking and drinking to cope motive as factors underlying the association between sexual assault history and risk perception.

Methods—Both perceived likelihood of experiencing incapacitated sexual assault and when to leaving a hypothetical sexual assault scenario were assessed as indicators of sexual assault risk perception. 660 female college students recruited from psychology courses completed questionnaires online.

Results—Results revealed that sexual assault history severity was positively associated with perceived incapacitated sexual assault likelihood and when to leave a risky scenario. Drinking to cope with anxiety was positively associated with perceived incapacitated sexual assault likelihood. Among women who reported regular drinking, typical weekly drinking was positively associated

¹Corresponding author: Elizabeth C. Neilson, MSW, MPH, University of Washington, Department of Psychology, Box 351525, Seattle, WA 98195, ecneils@uw.edu, 313-408-2928.

Contributors

Ms. Neilson, Ms. Bird, and Dr. Gilmore wrote and edited all drafts of the manuscript. Ms. Neilson and Dr. Gilmore conducted the statistical analyses with substantial consultation from Dr. Metzger. Drs. Gilmore and George designed the study and selected all measures. Dr. Norris provided consultation in the design of the study, and assisted in editing the final manuscript. All authors contributed to and have approved the final manuscript.

Conflict of Interest

All authors declare they have no conflicts of interest.

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with when to leave a risky scenario, such that women who reported more weekly drinks stayed in a potentially risky scenario longer than women who reported fewer weekly drinks.

Conclusions—These findings suggest that alcohol use and drinking to cope with anxiety are associated with risk perception. Sexual assault history was associated with both perceived incapacitated sexual assault likelihood and when to leave a hypothetical scenario. Alcohol use and drinking to cope are two potential points of intervention for sexual assault risk reduction programs, but further examination is needed.

Keywords

sexual assault; risk perception; college women; drinking to cope

Young adult women (ages 18 to 24) have the highest rate of sexual assault victimization compared to women of all other age groups (U.S. Department of Justice, 2014). Sexual assault, ranging from nonconsensual sexual touching to rape, occurs often on college campuses with 20 to 75% of women experiencing some form during college (Abbey et al., 2005; Krebs et al., 2007). Most sexual assaults on campus are perpetrated by a man known to the victim (Fisher et al., 2000) and involve alcohol use by the perpetrator, the victim, or both (Reed et al., 2009). Sexual assault can have many negative emotional (e.g., trauma symptoms; Ullman et al., 2013), academic (e.g., poorer academic achievement; Jordan, Combs, & Smith, 2014) and physical consequences (e.g., pain and sexually transmitted diseases; Kuehn, 2011); therefore, it is imperative to understand factors that are associated with sexual assault to reduce this traumatic experience for college women. To reduce sexual assault, there is a need for intervention in reducing sexual assault perpetration (Degue et al., 2014). As ongoing research develops and investigates intervention to reduce perpetration (Orchowski et al., 2016), parallel research investigates the processes through which women may reduce their risk of victimization (Gilmore, Lewis, & George, 2015; Senn et al., 2015). This study will examine several factors associated with adolescent/adult sexual assault (ASA) history and risk perception. The role of maladaptive coping strategies such as drinking to cope with negative emotions and weekly drinking associated with ASA severity will be discussed as associated with risk perception.

Offenders hold sole responsibility for perpetration, and understanding factors contributing to perpetration is of paramount importance in preventing sexual assault. However, there are factors that put women at risk for experiencing multiple assaults. Understanding the processes that increase risk for victimization may also benefit potential victims by reducing the risk that one is targeted for perpetration. One of the strongest factors associated with experiencing ASA is having a sexual assault history (Chu, 1992; Messman-Moore & Long, 2003). Further, anxiety and anxiety-related symptoms (e.g., posttraumatic stress symptoms) are the most commonly observed mental health outcomes of sexual assault (Rees et al., 2011). Trauma symptoms are thought to affect sexual re-assault by reducing a woman's ability to recognize cues that indicate a possible ASA (i.e., sexual assault risk perception; Cloitre & Rosenberg, 2006); however, these findings are mixed (for a review, see Gidycz et al., 2006). It is imperative to examine other factors including maladaptive coping methods like alcohol use to explicate these mixed findings.

The use of multiple methods to examine sexual assault risk perception may also help further understanding of these associations due to their complicated nature. A review (Rinehart & Yeater, 2015) indicated that simply asking women when they may leave a situation may not adequately assess risk perception because although women may be sensitive to cues, they may not leave the situation. Behavioral intent indicating when there are enough risk cues present to leave a potentially risky situation or when one cue is risky enough to leave can be one type of sexual assault risk perception. However, behavioral intent alone may not translate into actual behavior in potentially sexually assaultive situations as suggested by Rinehart and Yeater (2015). Individuals can also differ on general risk perception such as how likely one believes they are to be assaulted. Examining women's estimated likelihood of experiencing an ASA and assessing behavioral intent to leave a potentially risky situation would allow for a comprehensive understanding of the construct and its associated factors.

ASA Severity and Sexual Assault Risk Perception

The literature suggests that women with ASA histories are less able to perceive sexual assault risk than women without such histories; however, findings are mixed (for a review, see Gidycz et al., 2006). Listening to an audiotape of a hypothetical date rape, women with ASA histories took longer to signify that a man became sexually inappropriate compared to women without ASA histories (Soler-Baillo et al., 2005). Conversely, other research suggests that some women with ASA histories perceive risk but are not assertive in their behavioral responses (e.g., leaving the situation; Donat & Bondurant, 2003; Wilson et al., 1999; Messman-Moore & Brown, 2006; Nurius & Norris, 1996). Taken together, these findings suggest that women with ASA histories, compared to women without, may remain in risky situations longer (Franklin, 2013).

A concurrent vein of risk perception literature focuses on the perceived likelihood of experiencing ASA. Although women acknowledge ASA prevalence and risk in the general population, they often estimate their own risk to be lower than that of other women (Brown et al., 2005; Norris et al., 1999). It is possible that a failure to recognize one's own risk due to this optimistic bias occludes one's ability to perceive proximal risk (Nurius, 2000). However, women who have ASA histories report higher sexual assault risk likelihood compared to those without ASA histories (Brown et al., 2005; Norris et al., 1996). Prospective research shows that higher estimated assault likelihood is associated with future ASA (Orchowski et al., 2012). Therefore, including an assessment of both women's estimated assault likelihood and behavioral intent in a potentially risky scenario could be useful in understanding what proximal factors are associated with sexual assault risk perception.

Maladaptive Coping Strategies

Women with ASA histories employ a variety of behavioral and cognitive strategies to cope with negative emotions and thoughts related to their assault (Littleton et al., 2007; Walsh et al., 2010). Women with ASA histories are more likely to engage in problem drinking and experience negative drinking-related consequences. Women with ASA histories drink more over time (Lindgren et al., 2012) and are nearly five times more likely to report substance

abuse than those without ASA histories (Grayson & Nolen-Hoeksema, 2005; Kilpatrick et al., 2000; Gidycz et al., 2007). Motivational theories of alcohol identify drinking to cope as a motivator for people who utilize alcohol as a means of reducing negative affect (Cooper, 1994). Women with ASA histories may engage in alcohol use as a means of coping with their experience (Fossos et al., 2011; Ullman et al., 2009; Cooper, 1994). Indeed, women with ASA histories who engage in problem drinking are more likely to use drinking as a tension reduction strategy compared to women with ASA histories who do not engage in problem drinking (Smith, Smith, & Grekin, 2014). When used frequently, this form of coping may be associated with problem drinking and negative consequences of alcohol use (Holahan et al., 2001).

The association between trauma severity and problematic alcohol use may only be present for individuals who use alcohol to cope (Lindgren et al., 2012; Smith et al., 2014; Ullman et al., 2013). Mental health symptoms in this population are consistently associated with alcohol problems, but this relationship may be partially or fully mediated by the use of drinking as a coping strategy (Yeater et al., 2010; Ullman et al., 2005; Najdowski & Ullman, 2011). The use of this coping strategy not only predicts negative consequences, but also inadvertently increases the risk of sexual re-assault (Littleton & Ullman, 2013) because perpetrators may target these women (Parks, Hequembourg, & Dearing, 2008). As stated above, the responsibility of the assault remains with the perpetrator, and prevention and intervention efforts addressing perpetration are needed.

It is not clear whether increased risk for ASA in problem drinkers is related to risk perception. Women who report heavy drinking perceive themselves to be at higher risk of future ASA than nondrinkers (McCauley & Calhoun, 2008; Gidycz, et al., 2007; Untied et al., 2013). However, acute alcohol intoxication can dampen discomfort related to cues of sexual assault risk (Davis et al., 2009). Thus, while women may accurately endorse the belief that drinking places them at risk for ASA, situational risk perception and behavioral responding may be impaired with alcohol use. It is also unclear to what extent these associations exist for women who do not engage in more chronic problem drinking but do engage in heavy episodic drinking (HED), a high-frequency alcohol use behavior (American College Health Association, 2013) defined as four or more drinks in a two hour period [National Institute for Alcohol Abuse and Alcoholism (NIAAA), 2011].

Previous research suggests that distress interferes with women's in-the-moment risk perception (for review, Gidycz, McNamara, & Edwards, 2006). Thus, women who consistently rely on drinking as a coping strategy may be particularly vulnerable if their drinking to cope is related to high distress and/or the absence of other coping strategies. Such women may be so focused on alleviating distress that they are unable to perceive risk cues. Women who use drinking to cope may also drink more than those who do not use this coping strategy, and drinking heavily may be the mechanism through which sexual assault risk perception is affected. Alcohol use in itself can put women at risk for ASA for several reasons: women who drink are targeted by perpetrators, alcohol can narrow cognitive abilities and therefore decrease risk perception, and alcohol can impair one's ability to physically resist ASA (for a review, see Testa & Livingston, 2009).

Current Study

The current study examined sexual assault risk perception in a sample of undergraduate women in their first two years of college when their risk of sexual assault victimization is the highest relative to other age groups. While ASA survivors experience depressive symptoms and social withdrawal, the most commonly reported mental health symptom following an assault is anxiety-related (Rees et al., 2011). While there are multiple motives for alcohol use, the current study examined drinking to cope with anxiety symptoms due to the proportion of anxiety-related symptoms among ASA survivors and the association between anxiety disorders and drinking to cope. It is possible that the use of maladaptive strategies to cope with anxiety may interfere with risk perception. This may especially be true with drinking as a coping strategy given that alcohol use is associated with less sexual assault risk perception. Given the cross-sectional methodology, relations among the variables were hypothesized based on the temporal association between the variables and the current empirical literature (see Figure 1). Consistent with previous findings, it was hypothesized that ASA severity would be positively associated with drinking to cope with anxiety and positively associated with average weekly drinks. It was also hypothesized that drinking to cope would be positively associated with average weekly drinks. It was hypothesized that ASA severity would be positively associated with when to leave the scenario, such that greater ASA severity would be associated with remaining in the scenario longer. It was hypothesized that ASA severity would be negatively associated with perceived incapacitated sexual assault likelihood, such that greater ASA severity would be associated with lower perceived likelihood. It was further hypothesized that ASA severity would be indirectly associated with incapacitated sexual assault risk perception through drinking to cope with anxiety and alcohol use.

Method

Participants

A total of 673 female participants completed a web-based survey; 16 were excluded because of missing data on all key variables, leaving 660 participants in the sample. Participants were recruited from introductory psychology courses for a study about “drinking and sexual behaviors” and were given course credit for completing the web-based survey. Participants were eligible for the study if they were a) female, b) between the ages of 18 and 20, and c) engaged in heavy episodic drinking (defined as drinking 4 drinks or more in 2 hours or less in the past month; NIAAA, 2011) at least once in the past month. A history of prior sexual activity was not included as a criterion because it is possible that women who only have sexual victimization experiences (e.g., do not have a history of consensual sexual experiences) would potentially not qualify for the study if they did not identify what happened to them as part of their sexual history. Students in these courses are generally representative both demographically and in terms of alcohol consumption of the campus population (Neighbors et al., 2004).

Age, race, ethnicity, and relationship status were evaluated. Participants were 18.78 years old on average ($SD = .83$). The majority (62.9%) had been in college for less than a year, were not a member of a sorority (78.4%), spoke English as a first language (65.8%), and

lived in residence halls or dorm rooms (49.6%). The majority were White (40.3%) or Asian American/Pacific Islander (40.8%), and 9.9% were multiracial, 3.0% were Black/African American, 2.6% identified as “Other”; .8% were American Indian/Alaska Native, and 1.4% chose to not identify their race. Additionally, 8.5% of participants identified as Hispanic/Latina. For relationship status, participants were provided a list of different types of relationships and asked to indicate their relationship status: [Single-Not Dating (51.2%), Single-Dating (20.4%), In a Serious Relationship (28.1%), Engaged (.2%), Married (.2%), Divorced (0%)].

Measures

Sexual Assault Severity—Using the Sexual Experiences Survey (Koss et al., 2007), participants were asked about coerced sexual experiences at two time points - after their 14th birthday, but before entering college and since entering college. Behaviorally specific questions, including experiences perpetrated by verbal coercion, incapacitation, threats of physical force, and physical force, were assessed. ASA experiences included sexual contact, sexual coercion, attempted penetration, and completed penetration. Participants indicated the number of times that a tactic or multiple tactics were used up to 3 times. ASA severity was determined using a 63-point scale (Davis et al., 2014) for each time point with high scores indicating more severe sexual assault experiences and scores of 0 indicating no ASA (see Table 1 for mean and standard deviations). Rather than only examining the frequency (0 to 3 as assessed by the SES) and severity of nonconsensual sexual acts, this scoring procedure also takes into account the type of tactic utilized to obtain unwanted sexual contact (1 = sexual contact by verbal coercion; 2 = sexual contact by incapacitation; 3 = sexual contact by force; 4 = attempted or completed rape by verbal coercion; 5 = attempted or completed rape by incapacitation; 6 = attempted or completed rape by force). A severity score was calculated by multiplying each experience type by the frequency and then summing all of the experiences for a total of up to 63 points. This scoring system has been utilized in over 20 studies (e.g., Bosson, Parrott, Swan, Kuchynka, & Schramm, 2015; McDermott, Kilmartin, McKelvey, & Kridel, 2015; Nunes, Hermann, White, Pettersen, & Bumby, 2016) and has the advantage of taking into account the full range of severity of sexual assault victimization experiences and frequency. The ranges of ASA severity before college and since entering college were both 0 to 63.

Sexual Assault Risk Perception: When To Leave Hypothetical Sexual Assault Scenario—Participants were asked when they would leave a sexual assault scenario. The scenario was a revised version of the acquaintance scenario of the Risk Perception Survey, a previously published second person scenario involving a sexual assault perpetrated by an acquaintance in which both the man and woman were implied to have consumed alcohol (Messman-Moore & Brown, 2006). The original scenario was modified to include a different male name and specifics of the story to more accurately depict the local area (e.g. go “grab some food” instead of “drive to Taco Bell” and to go to his apartment to “watch a movie” instead of the “show you his new saltwater fish tank”). The scenario begins with the protagonist attends a party with friends, one of whom is indicated to be the designated driver. The protagonist and her friends begin dancing, and she is eventually approached by the male character. Each scene progressed into a riskier situation where the potential to be

sexually assaulted increased (e.g., her friends leave to take a sick friend home, the male character continues to pursue physical contact after the protagonist has pushed him away). After reading the story, the participant selected the scene in which she would leave the situation. Each situation was numbered from 1 to 25 with larger numbers indicating leaving later, or at an increasingly risky point, in the situation (see Table 1 for means and standard deviations). Participants viewed the entire story on the screen. The scenario prospectively has previously predicted revictimization with individuals indicating they would leave the situation later more likely to experience a revictimization compared to those who indicated they would leave the situation earlier (Messman-Moore & Brown, 2006). The original investigation of this measure found mean responses to range from 13.71 to 19.53 and 12.63 to 17.05 for women with sexual assault histories and without, respectively (Messman-Moore & Brown, 2006).

Sexual Assault Risk Perception: Perceived Incapacitated Sexual Assault Risk Estimation—Participants were asked to estimate the likelihood (in a percentage) that they would experience incapacitation by alcohol while engaging in unwanted sexual intercourse during their college career by a man they know (see Table 1 for mean and standard deviation). This question was developed by the research team.

Drinking Motives Questionnaire—Revised Short-Form—Participants were asked questions from the Drinking Motives Questionnaire – Revised Short-Form (Grant et al., 2007) with answer choices ranging on a 5-point scale (1 = *almost never or never*, 2 = *some of the time*, 3 = *half of the time*, 4 = *most of the time*, and 5 = *almost always or always*). Participants were asked how often in the past 12 months they drank based on 5 items from the coping-anxiety subscale (e.g. “to reduce my anxiety” and “to forget my worries”; $\alpha = .825$). Table 1 for mean and standard deviation).

Typical Weekly Drinking—Typical drinking was assessed using the Daily Drinking Questionnaire (Collins et al., 1985). Participants were asked how many standard drinks were typically consumed each day of their average week in the past 30 days and these was summed to calculate average drinks per week (see Table 1).

Procedure

Participants completed the web-based survey and were given extra course credit for their participation. Approximately 90% of the sample described taking the survey either at their home or in a private space. Upon completion of the survey, they were provided with information about mental health and sexual assault resources.

Data Analysis Plan

T-test and ANOVA analyses were conducted to ascertain any statistical significant associations between the demographic variables and the model variables. The hypothesized path model using a structural equation framework (see Figure 1) was tested in Mplus 7 (Muthén & Muthén, 2012). One higher-order factor reflecting adolescent and adult sexual assault (with pre-college sexual assault and during-college sexual assault severity scores as indicator variables) was modeled using factor analytic methods. Factor analysis reproduces

inter-correlations among variables to create a latent variable that represents the common variance of measured variables. All other constructs were modeled as manifest variables. Perceived incapacitated sexual assault likelihood and when to leave the scenario were modeled as dependent variables. Drinking to cope, average drinking, perceived likelihood of experiencing incapacitated rape, and leaving the scenario were free to correlate in the model. Age, relationship status, race, and ethnicity were included in the model as covariates, however are not included in the figure for parsimony.

Maximum likelihood estimation with robust standard errors was utilized. Maximum likelihood is an asymptotically efficient and unbiased estimator that selects the value of parameters that maximize the likelihood function, that is, maximize the agreement of the model with the observed data. MLE with robust standard errors was chosen as this estimator is robust against violations of normality (Muthén & Muthén, 2012) and can accommodate data assumed to be missing at random.

The proposed model was evaluated using model fit indices (e.g., CFI), parameter estimates, and theoretical salience. Chi-square test is sensitive to sample size; thus, we did not use the statistical significance of the chi-square test as the primary indicator of model fit. Instead, multiple fit indices were utilized to interpret model fit and to prevent failure to reject an inappropriate model: a Chi square test examines whether the difference between the observed and modeled covariance matrices are statistically significantly different; root mean square error of approximation (RMSEA) that indicates the covariance matrices between the hypothesized model and population model are not significantly discrepant (Kenny, 2014); comparative fit index (CFI) that indicates the discrepancy between the data and the hypothesized model while adjusting for sample size (Hu & Bentler, 1999); and standard root mean square residual (SRMR) that indicates the standardized difference between the observed correlation and the predicted correlation were used (Kenny, 2014). Good model fit was indicated with a nonsignificant chi square test, RMSEA values less than .05, CFI values greater than .95, and SRMR values less than .06 (Kline, 2005). Parameter estimates were carefully examined to ascertain if the proposed model was consistent with estimates examined in previous research. To meet criteria for theoretical salience, the predicted model was grounded in previous research and theory. Given that almost half of the sample indicated they drank zero drinks in their typical weekly drinking in the past month, the model was rerun for women who endorsed drinking at least one drink per week in a typical week in the past month.

Results

Bivariate correlations indicated that age was positively associated with Since Entering College ASA Severity ($r = .136, p < .01$) and drinking to cope with anxiety ($r = .086, p < .05$). ANOVA analyses indicated that there were significant differences across racial groups for Before College ASA, Since Entering College ASA, Weekly Drinks, and Perceived Likelihood of Sexual Assault. Relationship status was significantly associated with all variables of interest. Descriptive statistics and correlations for the variables included in the model are shown in Table 1.

Approximately 40% ($n = 259$) of the participants experienced ASA either before or since entering college. One hundred and ninety-seven participants (29.98% of the sample) endorsed experiencing an ASA before entering college. One hundred and fifty-two participants (21.35% of the sample) endorsed experiencing an ASA since entering college. Fourteen percent of the total sample (35.5% of those who experienced an ASA) experienced an ASA both before and since entering college. Frequency of type of ASA experienced is shown in Table 2. The most frequently endorsed form of Before College ASA was attempted or completed rape via coercion. The most frequently endorsed form of Since Entering College ASA was unwanted sexual contact via incapacitation. While the frequency of ASA within this sample is comparable to national rates of sexual assault on college campuses, the high frequency of unwanted sexual contact in comparison to attempted or completed rape and the high frequency of coercion as a tactic in comparison to others results in a low mean ASA Severity on the 63-point scale. Comparison of the model variables by ASA status is indicated in Table 3. Regarding drinking, participants reported 4 drinks on average per week (see Table 1). Additionally, 318 (48.40%) participants reported no weekly drinking. Among those who drank, the mean typical weekly drinks was 8.32 ($SD = 7.33$). Among those who drank, the majority had engaged in heavy episodic drinking as defined as drinking 4 drinks or more in 2 hours or less in the past month ($n = 238$, 70.21%; NIAAA, 2011). These rates are consistent with national averages of drinking consumption among college students (National Institute on Alcohol Abuse and Alcoholism, 2015).

The final model (Figure 1) was a good fit for the data, $\chi^2(3) = .462$, $p = .927$, RMSEA $< .001$, CFI $> .999$, and SRMR = .005. The standardized coefficients for the paths are presented in Figure 1. While not represented in the figure for parsimony, relationship status was significantly associated with drinking to cope ($\beta = .12$, $p < .01$) and sexual assault likelihood ($\beta = -.10$, $p < .05$). Race was significantly associated with number of weekly drinks ($\beta = .20$, $p < .001$). Sexual assault severity was positively associated with number of weekly drinks and endorsing the drinking motive of drinking to cope with anxiety. Sexual assault severity was also positively associated with both perceived incapacitated sexual assault likelihood and indication of when to leave the scenario. There was no significant association between typical weekly drinking or indication of when to leave the scenario or perceived incapacitated sexual assault likelihood although the association between typical weekly drinking and perceived incapacitated sexual assault likelihood approached statistical significance ($p = .06$). Similarly, there was no significant association between drinking to cope with anxiety and indication of when to leave the scenario, although there was a significant association with drinking to cope with anxiety and perceived incapacitated sexual assault likelihood. Perceived incapacitated sexual assault likelihood and when to leave were not significantly associated.

Approximately 40% of the sample reported that they did not drink alcohol during a typical week during the past month. We conducted t-tests to ascertain whether there were statistically significant differences between women who reported consuming no alcohol in a typical week and women who reported drinking alcohol during a typical week. Women who reported regular drinking were significantly different than women who did not report regular use (all t 's < -3.83 , all p 's $< .05$); they were more likely to have ASA histories, more likely to report drinking to cope, perceived their risk of incapacitated sexual assault to be higher,

and reported they would leave the hypothetical scenario later than women who did not report regular drinking. The same model was examined for women who indicated they drank at least one drink per week for a typical week in the past month (see Figure 2). Similar to the above model, ASA history was significantly, positively associated with drinking to cope, weekly drinks, perceived incapacitated sexual assault likelihood and when to leave the scenario. In contrast to the hypothesized model, number of weekly drinks was significantly, positively associated with when to leave the scenario, such that women who reported a greater number of drinks in a typical week reported leaving the hypothetical scenario later than women with less drinks per week. Within the full sample, the association between weekly drinks and perceived incapacitated sexual assault likelihood was marginally significant, however for regular drinkers only, this relationship was not statistically significant. Finally, for regular drinkers, the association between drinking to cope and perceived incapacitated sexual assault likelihood was marginally significant ($p = .06$) rather than significant at the $p < .05$ level, although the effect size of this effect remained similar across models.

Discussion

The results revealed that sexual assault severity was positively associated with drinking to cope with anxiety, weekly drinks, perceived incapacitated sexual assault likelihood, and when to leave the hypothetical scenario in a sample of college women. For our full sample, drinking to cope with anxiety was positively associated with perceived incapacitated sexual assault likelihood; that is, individuals who drank more to cope perceived their risk to be higher than those who drank to cope with anxiety less or not at all. For regular drinkers, this association was marginally significant. For our full sample, only ASA severity was associated with when to leave a hypothetical sexual assault scenario, such that women with more severe histories were more likely to intend leave the scenario later. Interestingly, for women who indicated at least one drink per typical week in the past month, number of weekly drinks was positively associated with when to leave the scenario. Taken together, these findings emphasize the importance of drinking to cope with anxiety in perceived incapacitated sexual assault likelihood. The present study suggests college women who drink to cope with anxiety accurately perceive their risk to be higher than those who do not engage in those alcohol-related behaviors. We have chosen to focus our discussion on the full sample due to the advantages of it being applicable to more students rather than just focused on those who engage in weekly drinking.

Results were consistent with previous research suggesting that women with sexual assault histories drink more than women without a history of sexual assault (Grayson & Nolen-Hoeksema, 2005; Kilpatrick et al., 2000; Gidycz et al., 2007). Surprisingly, these results are not consistent with previous findings that the more women drink, the higher they estimate their sexual assault risk (McCauley & Calhoun, 2008; Gidycz et al., 2007; Untied et al., 2013). It is further surprising that drinking to cope and typical weekly drinking were not associated with when to leave a hypothetical sexual assault scenario for the full sample. It is possible that these null findings are attributable to a low frequency of weekly drinking in the recruited sample, despite their engagement in heavy episodic drinking. Indeed, when we examined this model for women who drank regularly, there was a positive, significant

association between weekly drinks and when to leave the scenario. It is also possible that a third variable, such as a personality characteristic or sexual assault resistance self-efficacy, could be associated with behavioral intentions to leave a sexual assault scenario. Indeed, sensation seeking has been associated with delayed response latencies in hypothetical sexual assault analogs (Volkert et al., 2013). Further, the association between personality characteristics (e.g., neuroticism, sensation seeking) and alcohol use may be mediated by drinking motives (Cooper et al., 2000). Future research should consider whether sensation seeking impairs risk-perception or sensation seeking may impair the ability to act to mitigate that risk. Social influences, including perceived sexual norms and drinking norms, may also influence sexual assault risk perception and behavioral intention to leave a sexual assault scenario. For example, a potential partner's dominance may be misattributed to social norms specific to gender roles and men's social dominance rather than potential sexual assault. Additionally, social norms prescribing polite behavior and proscribing rudeness may decrease self-efficacy to leave a sexual assault situation. Therefore, future research should also consider the role of social norms in sexual assault risk perception.

Another potential third variable associated with factors assessed in the current model could be a tendency to respond to distress with avoidance coping. Women who drink to cope with distress may lack alternative problem-solving skills and fail to accurately identify or respond to their own emotions, leaving them at higher risk for re-assault and at a disadvantage for risk perception. Drinking to cope with anxiety may also involve other maladaptive coping behaviors, such as having sex to cope (Cooper et al., 2000). For women with sexual assault histories, the use of sex to regulate negative affect has been positively associated with the consumption of alcohol at last sexual intercourse (Orcutt et al., 2005), possibly impairing risk perception due to alcohol use. Further research should assess adaptive as well as maladaptive coping strategies to evaluate this possibility.

Including multiple sexual assault risk perception outcomes within the same framework is essential given the complexities of sexual assault risk perception. These findings confirm previous work that perceived likelihood to re-experience sexual assault does not guarantee that women will leave a sexual assault situation (Messman-Moore & Brown, 2006). Women balance a complex set of cognitive and emotional factors when perceiving and acting during a sexual assault (Norris et al., 1996; Nurius & Norris, 1996). Future research could include an examination of multiple scenarios to account for potential situational differences that may impact sexual assault risk perception as suggested by Rinehart and Yeater (2015). Future research could also include alcohol administration studies examining the synergistic effects of both ASA history and acute alcohol intoxication on sexual assault risk perception.

This study supports the need for future research to examine drinking and drinking to cope in future sexual assault risk reduction programming. In fact, it may be that teaching women with ASA histories how to effectively cope with anxiety symptoms in high-risk settings that result from a sexual trauma (i.e., drinking to cope with sexual assault-related triggers in potential sexual assault situations) may improve sexual assault risk perception due to increasing effective coping rather than ineffective coping skills such as drinking. There is no standard norm or clinical cut-off for risk perception, thus we cannot label any participant's assessment of their likelihood to experience incapacitated sexual assault or when to leave a

situation as accurate or inaccurate. These results are consistent with prior results that women with ASA histories are remaining in hypothetical risk situations longer than women without ASA histories (for review, Gidycz et al., 2006). While it would be the ideal that such readiness were not necessary, risk reduction interventions should consider teaching women the behavioral skills, resistance self-efficacy to act, and adaptive coping skills once the risk is identified (Gidycz et al., 2006). Further, the results of this study support primary and secondary prevention to college students focusing on the risk for assault, including alcohol and sexual assault protective behavioral strategies. Future investigations should examine the use of screening for assault history with the goal of tailoring interventions to students' needs. However, no matter which coping skills a woman chooses, it is not her fault if she is sexually assaulted; the fault lies solely with the perpetrator.

Limitations

While the present study adds important information to the current literature on sexual assault risk perception, there are some limitations to consider. The first is that this is cross-sectional data, and underlying mechanisms cannot be determined and other models could fit the data. Although we have presented potential models for the full sample and regular drinkers that fit the data well, the variables are only associated with each other. Future investigations of these constructs and future interventions should prioritize experimental and prospective methodologies when possible.

All participants engaged in at least one instance of heavy episodic drinking in the past month, and future research should examine whether these results are replicated in samples of women who do not engage in heavy episodic drinking. Over 40% of the sample reported no average weekly drinking. Of those who reported weekly drinking, the mean of typical weekly drinks was 8.32. Even after examining this model with women who reported regular weekly drinking, there was considerable variability (range: 1 to 40). Future research should investigate whether these relations may be replicated among women who report low and high levels of typical weekly drinking. Further, a history of sexual assault is associated with use of other substance and polysubstance use (Eshelman, Messman-Moore, & Sheffer, 2015; Ruglass, Shevorykin, Brezing, Hu, & Hien, 2017), and marijuana has also been shown to influence risk perception (Eshelman et al., 2015). Further investigations should examine how different substances other than alcohol are associated with risk perception. Given the proportion of sexual assaults that involve alcohol use, perceived sexual assault likelihood when drinking alcohol was assessed. Future research should also investigate overall risk perception. While anxiety and anxiety-related symptoms are the most commonly observed mental health outcome of sexual assault (Rees et al., 2011), drinking to cope with anxiety is only one of several reasons for alcohol use (e.g., drinking to conform, drinking to socialize). Future research should examine these associations with more drinking motives to more comprehensively assess how drinking motives transact with alcohol use and affect risk perception.

While our sample reported sexual victimization experiences that are representative of national rates with a range of ASA severity, the average ASA severity was low. Future research should attempt to replicate these findings in samples with higher ASA severity.

Further, it is possible that participants underreported sexual victimization experiences and alcohol risk behaviors. Social desirability has affected participants' reports of sexual victimization experiences (Yarkovsky & Timmons, 2014); thus, future research should incorporate measures of social desirability to address this limitation. Although the ASA severity measures can be temporally examined given the timeframes provided in the questions, it may be possible that drinking preceded the sexual assaults. It may also be that differences in risk perception existed prior to experiencing ASA. Thus, future research should include longitudinal designs to examine the relationships between these variables over time. Finally, there is an ongoing need for examination of the synergistic relations of factors contributing to risk perception. Thus, future research should employ the statistical analyses needed to examine these complex interactions.

The current sample included a diverse sample of college women including a large number of Asian American/Pacific Islander women. This is a strength of the study, but application of these results should consider the representation of women from other ethnicities. While identifying as heterosexual was not an inclusion criterion of this study, all but five participants identified as mostly heterosexual. Because many women who identify as lesbians or bisexual have ASA histories (Rothman, Exner, & Baughman, 2011), their data were included in the analyses. It is possible that the hypothetical scenario has less validity for lesbian women than heterosexual women. Future studies should examine the role of drinking to cope in sexual re-assault for women who identify as sexual minorities.

Conclusion

In this college sample, ASA severity was associated with drinking and drinking to cope, and drinking to cope was a factor in perceived incapacitated sexual assault likelihood estimations. Alcohol-related factors may be important to consider clinically and may be useful to include in more widespread prevention programs. Clinicians and future research should assess for alcohol use including reasons for use in women with ASA histories.

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Highlights

- Drinking to cope was associated with perceived sexual assault likelihood
- Sexual assault history (SAH) was associated with perceived sexual assault risk
- SAH was associated with intentions to leave a sexual assault scenario
- SAH and drinking to cope are important to consider in risk perception

Figure 1. Hypothesized and final path model for full sample

Note: *** $p < .001$; ** $p < .01$; * $p < .05$; + $p = .06$ Both significant (solid arrows) and non-significant (dotted arrows) paths are indicated in the model.

Figure 2. Final Model for Regular Drinkers

Note: ^{***} $p < .001$; ^{**} $p < .01$; ^{*} $p < .05$; ⁺ $p = .06$ Both significant (solid arrows) and non-significant (dotted arrows) paths are indicated in the model.

Table 1

Means, standard deviations, and correlations of all variables

Measure	<i>M (SD)</i>	Range	1	2	3	4	5	6
1. ASABC	3.91(9.08)	0–63	-	.456**	.164**	.193**	.236**	.232**
2. ASAC	2.30(6.83)	0–63		-	.185**	.227**	.332**	.303**
3. Intentions to Leave Scenario	11.12(4.43)	1–25			-	.193**	.202**	.210**
4. Perceived Sexual Assault Likelihood	6.90(16.23)	0–100				-	.263**	.220**
5. Weekly Drinks	4.32(6.73)	0–40					-	.409**
6. Drinking to Cope with Anxiety	1.55(7.11)	1–4.8						-

Note: ASABC = Adult sexual assault before college; ASAC = Adult sexual assault since college.

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

Table 2

Percentage (Frequency) of Type of ASA Among Women with ASA Histories

	Pre-College (n = 197)	Since College (n = 152)
Unwanted Sexual Contact		
Coercion	43.15% (85)	27.6% (42)
Incapacitation	36.5% (72)	60.5% (92)
Force or Threat of Force	20.81% (41)	17.10% (26)
Attempted or Completed Rape		
Coercion	55.3% (109)	22.40% (34)
Incapacitation	34.52% (68)	38.20 % (58)
Force or Threat of Force	18.87% (37)	12.50% (19)

Note. Women could endorse multiple ASA acts, thus ASA categories are not mutually exclusive.

Table 3

Comparison of Model Variables by ASA History

Variable	<i>ASA Before College</i>		<i>ASA After College</i>	
	Yes	No	Yes	No
Intentions to Leave Scenario	12.10(4.89) ***	10.68(4.12)	12.43(4.94) ***	10.72(4.19)
Perceived Sexual Assault Likelihood	11.52(20.86) ***	4.90(13.28)	14.15(22.99) ***	4.66(12.76)
Weekly Drinks	6.38(7.99) ***	3.41(5.85)	8.43(7.53) ***	3.09(5.96)
Drinking to Cope with Anxiety	1.77(.81) ***	1.45(.644)	1.98(.79) ***	1.42(.63)

*
 $p < 0.05$;**
 $p < 0.01$;***
 $p < 0.001$