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Alcohol-involved Assault: Associations with posttrauma alcohol use, consequences, and expectancies

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Abstract

Victim alcohol consumption is common prior to sexual assault, and a burgeoning literature suggests that victims who were intoxicated during assault may differ in post-assault adjustment compared to those who were not impaired. Less is known about potential relationships between experiencing an alcohol-involved assault (AIA) and later drinking behavior. In this study, we examined the relationships between sexual assault, subsequent drinking behavior and consequences, and alcohol expectancies in a sample of 306 undergraduate women who reported current alcohol use and reported either no trauma history ($n = 53$), non-AIA ($n = 69$), or AIA ($n = 184$). Differences emerged for alcohol use ($F(2, 298) = 12.78, p < .001$), peak blood alcohol content ($F(2, 298) = 9.66, p < .001$), consequences ($F(2, 296) = 7.38, p < .005$), and positive alcohol expectancies ($F(14, 796) = 1.93, p < .05$). In particular, women with an AIA reported greater alcohol use and positive expectancies compared to women with no trauma history and women with a non-alcohol influenced assault. In addition, both assault groups reported greater drinking consequences than women with no trauma history. Findings suggest that it is the women who are assaulted while under the influence of alcohol who evidence more alcohol use and alcohol-related problems following assault.

Keywords

sexual assault; alcohol-involved assault; drinking consequences; alcohol expectancies

1. Introduction

The consumption of alcohol is common during sexual assaults especially in college populations (e.g., Abbey et al., 2002; Abbey, 2002; Littleton, Radecki Breitkopf, & Berenson, 2008; Ullman, 2003). In a recent study more than a third (37%) of victims reported being impaired at the time of sexual assault (Littleton et al., 2008) whereas a separate study found that 70% of women who were sexually assaulted had consumed alcohol prior to the assault (Reed, Amaro, Matsumoto, & Kaysen 2009). Despite these findings we are just beginning to investigate how a victim's alcohol use during the assault may affect post-event recovery and coping. The documented relationship between alcohol use and trauma exposure is a complex one, with alcohol use as a potential contributor to both the experience of assault and adjustment following assault. A better understanding of

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the relationship between alcohol use and the experience of traumatic events is crucial as we continue to develop effective prevention and intervention efforts.

There are mixed findings regarding whether assaults that involve alcohol differ from those that do not involve alcohol in terms of characteristics such as threat, use of force, and relationship of perpetrator and victim. For example, while one early study found less physical force for assaults involving alcohol (Abbey, BeShears, Clinton-Sherrod, & McAuslan, 2004), more recent studies found no differences in use of physical force (Kaysen, Lindgren, Lee, Lewis, Fossos, & Atkins, 2010; Littleton, Grills-Tauchel, & Axsom, 2009). Similarly, findings have been mixed regarding whether or not assaults that involve alcohol are more likely in situations where the perpetrator and victim have had prior consensual sexual relationships (Kaysen et al., 2010; Littleton et al., 2009; Testa et al., 2003). Thus, while it appears that there may be fundamental differences in assault characteristics for those experiences that involve alcohol, the exact nature of these differences remain unclear.

More research has focused on alcohol use following trauma exposure. In particular, it is widely accepted that following sexual assault almost a third of women develop problematic alcohol use (e.g., Kessler, Sonnega, Bromet, Hughes, & Nelson, 1995). It is often theorized that this results from “self-medication” whereby the victim uses alcohol as an attempt to cope with distressing emotions, cognitions, and behaviors following the assault (Saladin, Brady, Dansky, & Kilpatrick, 1995). Cross-sectional studies on sexual assault and alcohol use have generally concluded that women who report sexual assault report greater alcohol use and greater alcohol-related consequences (Corbin, Bernat, Calhoun, McNair, & Seals, 2001; Larimer, Lydum, Anderson, & Turner, 1999; Marx, Nichols-Anderson, Messman-Moore, Miranda, & Porter, 2000), and several prospective studies on this topic have confirmed a longitudinal relationship (Danielson, Amstadter, Dangelmaier, Resnick Saunders, & Kilpatrick 2009; Gidycz, Hanson, & Layman, 1995; Kilpatrick, Acierno, Resnick, Saunders, & Best, 1997; Najdowski & Ullman, 2009). Alcohol misuse following assault has been linked to numerous detrimental outcomes, such as greater life impairment, greater symptom severity, greater health care utilization, and poor prognosis in treatment (Bradizza, Stasiewicz & Paas, 2006; Ouimette, Ahrens, Moos & Finney, 1997; Ouimette, Moos, & Finney, 2003). At the same time it is important to recognize that not all women go on to develop alcohol misuse following assault. However, little research has focused on identifying who is at greatest risk for alcohol misuse following sexual assault.

Recent studies have begun to investigate the intersection of the two factors introduced above: that is alcohol use during and following assault. Specifically, researchers have begun to ask if victims reporting an alcohol-involved assault (AIA) differ in their post-assault alcohol use compared to those who do not report use during assault (non-AIA). To our knowledge only three studies to date have looked at differences between AIA and non-AIA victims in regards to their post alcohol use. In one prospective study with college students, those reporting an incapacitated assault reported heavier drinking before the assault, as well as heavier alcohol use following the assault (Kaysen, Neighbors, Martell, Fossos, & Larimer, 2006). A recent study found similar results, again in a female college sample, where women who reported being either incapacitated or impaired by alcohol during assault reported higher alcohol use post-assault than women who reported no alcohol use preceding the assault (Littleton et al., 2009). Moreover, a lifetime history of incapacitated rape has been associated with increased risk of past year binge drinking whereas forcible rape was not associated with increased drinking risk in college females (McCauley, Ruggiero, Resnick, Conoscenti, & Kilpatrick, 2009). Taken together, women who are intoxicated during assault may be more at risk for higher post-assault drinking compared to those who were not intoxicated during assault. Given that women with an AIA report more overall

heavy alcohol consumption prior to the assault experience (e.g., Kaysen et al., 2006; Testa, Livingston, Vanzile-Tamsen, & Frome, 2003) these results may be interpreted to suggest a general heavy pattern of alcohol use in women who experience AIA, both pre- and post-assault. When looking at consequences of alcohol use, an important component of problematic alcohol use, the experience of assault is associated with increased negative consequences (Corbin et al., 2001; Kaysen et al., 2006; Marx et al., 2000). This increase in negative consequences appears to be related to alcohol use during assault, with those reporting an AIA reporting greater negative consequences than victims of non-AIA (Kaysen et al., 2006). However to our knowledge this is the only study that has looked specifically at the relationship between AIA and consequences of drinking behavior.

Even less is known about how an AIA may affect individuals' subjective experience of alcohol use; that is, not just quantity of alcohol use but expectancies about the effects of alcohol. Research on victimized versus non-victimized women has shown that those with traumatic histories report greater positive alcohol expectancies about tension reduction, sexual enhancement, and global positive change, than those without trauma histories (Benson et al., 2007; Corbin, Bernat, Calhoun, McNair, & Seals, 2001; Palmer, McMahon, Rounsaville & Ball, 2010). To our knowledge, only one study (Marx, Nichols-Anderson, Messman-Moore, Miranda & Porter, 2001) has looked specifically at differences in alcohol expectancies in women with and without an AIA to examine the role of alcohol use during assault on post-event beliefs and experiences of alcohol use, finding that women with AIA reported more negative *and* positive expectancies about alcohol use compared to both non-alcohol-related victims and non victims.

Since the literature on this topic is limited it still remains unclear how the experience of an AIA might affect alcohol expectancies and consequences. On the one hand, individuals with heavy alcohol use tend to report both greater positive expectancies about alcohol (e.g., Thombs, 1993; Werner, Walker, & Greene, 1995) as well as more negative consequences resulting from their use (Corbin et al., 2001; Kaysen et al., 2006; Marx et al., 2000), suggesting that women with AIA might report both greater positive expectancies and greater consequences related to alcohol use. Lending further support to this idea, AIA has been shown to be associated with increased self-blame, stigma, and negative reactions from others (e.g., Koss, Figueredo, & Prince, 2002; Littleton et al., 2009; Testa & Livingston, 1999), all of which might be associated with an increased likelihood of avoidant coping strategies and use of alcohol to cope. On the other hand, an AIA is a powerful, negative learning experience and we might expect women with an AIA to report more negative beliefs about alcohol consumption based on their appraisal of the traumatic event. Thus, it remains unknown how alcohol use during assault may impact not only post-event amount of alcohol consumption and consequences but also alcohol-related expectancies.

This study seeks to explore the relationship between alcohol use during assault and alcohol use behavior. The study compares women with AIA, women with a non-AIA, and women with no trauma histories on current quantity/frequency of alcohol use, expectancies of alcohol use, and consequences of alcohol use. We also explore differences in assault characteristics for the AIA and non-AIA groups as these characteristics can be associated with greater risk of negative outcomes (Zinzow et al., 2010). Based on the existing past literature we hypothesize: women with AIA will report (1) greater alcohol use than the other two groups, (2) greater negative consequences of alcohol use than the other two groups, and finally (3) greater alcohol expectancies, both negative and positive, compared to the other two groups. This research was conducted in a sample of female college students, a population that is at particularly high risk of AIA.

2. Method

2.1 Participants

Participants included 306 undergraduate women enrolled at a large west-coast university who reported current alcohol use and either AIA ($n=184$), non-AIA ($n=69$), or no trauma history ($n=53$) as part of a larger study focused on daily assessment of student health behaviors in heavy drinking college students. We conducted preliminary analyses comparing these three groups to a fourth group of participants, those reporting both non-AIA and AIA. Overall, this group of participants did not differ significantly from the AIA group on any of our main outcome variables. Therefore, in order to distinguish our groups as thoroughly as possible and to simplify our analyses women who reported both an AIA and a non-AIA ($n = 84$) were excluded from analyses.

The participants in this study were selected for endorsing at least some heavy episodic drinking. Specifically, participants in all three groups had to report consuming 4 or more drinks on one occasion at least twice in the past month. For the two assault groups (AIA and non-AIA) all women reported an experience of an adult sexual assault (i.e., a sexual assault that occurred after the age of 14). In addition, participants in the AIA group had to indicate that the AIA was the one they considered to be the worst sexual assault. In this group, 92% of women reported that they had 4 or more drinks before the assault ($n = 170$) and the mean number of drinks prior to the assault was 7.01 ($SD = 2.94$), suggesting a moderate to high level of intoxication during the assault for participants reporting an AIA. Participants in the non-AIA group had to report that their worst experience of adult sexual assault occurred while sober (e.g., no alcohol use by them during the assault) and had to report no history of other sexual assaults where they were under the influence of alcohol. Participants in the no-trauma control group had to report no history of DSM-IV-TR Criterion A traumatic events, defined as events involving threat or actual injury/death or threat to personal integrity (Criterion A1) as well as an emotional response of fear, helplessness, or horror (Criterion A2; APA, 2000). The no-trauma comparison group was included to examine drinking outcomes in a high risk sample while controlling for a history of trauma in order to specifically look at the relationship between assault exposure and drinking behavior.

The mean age of participants was 20.38 years ($SD = 1.50$). The majority of participants were Caucasian (72.5%) with 16.0% being Asian/Pacific Islander, 2.0% being African American, 1.0% being Native American/Alaskan Native, 7.5% being Multi-ethnic, and .3% reporting Other as their racial background. Four percent of participants reported Hispanic ethnicity. The majority of participants identified as heterosexual (96.4%), with 1.3% identifying as Bisexual, .3% identifying as Lesbian, and 2.0% identifying as Questioning. The participants were dispersed in terms of year in school with the breakdown being as follows: 15.4% freshman, 19.6% sophomores, 24.5% juniors, and 40.2% seniors. Finally, when asked about current relationship status 19.6% of participants reported being single and not dating, 33% reported being single and casually dating, 45.4% reported being single and exclusively dating, .6% reported being engaged, and .9% reported being married. There were no significant differences between the groups (AIA, non-AIA, no-trauma control) on any of the above demographic variables.

2.2 Measures

Participants completed self-report measures of demographics, sexual assault experiences, alcohol use, alcohol expectancies, and consequences of alcohol use. Primary measures are described in detail below.

The experience of assault was assessed using the Standardized Trauma Interview (STI; Resick et al., 1988). Specifically, the STI queries for alcohol use during the assault, both

presence/absence of use and number of drinks consumed, as well as other trauma characteristics such as perceived threat and injuries sustained during the assault, both rated on a Likert-like scale from zero to six, with 0 being “no threat/injuries” and 6 being “severe threat/injuries”. The STI also queries for relationship to the assailant by presenting various relationships (e.g., stranger, date, seen but not talked to before) and asking participants to indicate “yes” or “no” on whether the stated relationship applies to the perpetrator. This measure is used in the trauma literature to assess aspects of assault experiences (Kaysen, Rosen, Bowman, & Resick, 2010; Kaysen, Morris, Rizvi, & Resick 2005; Rizvi, Kaysen, Gunter, Griffin, & Resick, 2008).

The Quantity Frequency Questionnaire (QF; Dimeff et al., 1999) was used as a measure of current drinking behavior and specifically assessed peak drinking over the past month. Information to compute blood alcohol content (BAC) was collected to devise the outcome variable of peak BAC. Participants were asked to report gender and body weight as well as the number of drinks consumed and the number of hours spent drinking for each drinking occasion over the last month. The highest drinking occasion was then selected as the peak occasion. The Widmark formula was used to compute peak BAC: $((\# \text{ of drinks}/2) \times (9.0 \text{ gender constant for females}/(\text{Pounds of person})) - (\text{Hours spent drinking} \times .017))$ as it has been shown to estimate BAC with relatively good accuracy and is comparable to other estimation formulas (Carey & Hustad, 2002; Hustad & Carey, 2005; National Highway Traffic Safety Administration, 1994). It is highly correlated with other measures of alcohol use ($r = .95$) and has demonstrated high test-retest reliability ($r = .93$; Poikolainen et al., 2002). BAC is expressed in terms of grams of ethanol per 100 ml of blood (percentage g/ml).

A modified version of the Daily Drinking Questionnaire (DDQ; Collins et al., 1985) was used to assess current alcohol consumption and specifically to measure the number of drinks consumed during a typical week. Participants were asked to report how much alcohol they drank on each day of a typical week during the past three months. For each participant, the number of drinks consumed per day was summed to determine total drinks per week. For the DDQ, a drink was defined as 12 oz. of beer, 10 oz. of microbrew or wine cooler, 4 oz. of wine, or 1 cocktail with 1 oz. of 100-proof liquor or 1.25 oz. of 80-proof liquor. The scale has exhibited modest convergent validity with other measures of college student drinking, with correlations ranging from .50 to .60 (Baer, Stacy, & Larimer, 1991; Collins et al., 1985; Larimer, Irvine, Kilmer, & Marlatt, 1997).

Alcohol expectancies were measured using the Comprehensive Effects of Alcohol Questionnaire (CEOA; Fromme et al., 1993). Participants were asked to rate how likely they were to experience 38 different physiological, psychological, and behavioral outcomes while under the influence of alcohol. Expectancies were divided into positive subscales of sociability, tension reduction, liquid courage, and sexuality and negative subscales of cognitive behavioral impairment, risk aggression, and self-perception. The number of expectancies endorsed for each subscale was then summed. Sample items include “I would be outgoing,” “My problems would seem worse,” “I would feel calm.” The CEOA has demonstrated adequate test-retest reliability with correlations in the following ranges: $r = .66-.72$ for positive expectancies and $r = .75-.81$ for negative expectancies (Fromme et al., 1993). In this sample the CEOA demonstrated good internal reliability (positive expectancies Cronbach’s $\alpha = .84$; negative expectancies Cronbach’s $\alpha = .81$).

Alcohol-related consequences over the past 6 months were assessed using a modified version of the Rutgers Alcohol Problem Index (RAPI; White & Labouvie, 1989). The RAPI asks students to rate the frequency of occurrence of 23 consequences associated with alcohol use. Two items to assess drinking and driving were added. Our scoring reflects the number

of consequences experienced (range 0 to 25). Sample items include “Not able to do homework or study for a test,” “Passed out or fainted suddenly,” “Had a fight, argument or bad feelings with a friend.” This scale has demonstrated high internal reliability (Cronbach’s $\alpha = .92$; White & Labouvie, 1989) In this sample the scale also demonstrated high internal reliability (Cronbach’s $\alpha = .90$).

2.3 Procedures

Participants completed a 20-minute online screening assessment and a 45-minute online baseline assessment as part of a larger study on trauma exposure, PTSD and alcohol use. Students were invited to the screening phase through rolling recruitment from a random sample of eligible women provided by the university registrar. Eligibility criteria for the screening phase included reported female gender, 18 years of age or older, a registered undergraduate, and agreement to have contact information released. Selected individuals received a pre-notification letter followed by an email invitation with information about the study and instructions for logging-on to the screening assessment. Participants who met study criteria at screening were invited to the larger study and linked to the 45-minute online baseline assessment immediately after screening. At both time-points, non-responders and partial completers received phone and email reminders to complete the assessments. Incentives included a \$10 check for completion of the screening assessment and a \$35 check for the completion of the baseline assessment. All procedures were approved by the university’s IRB and a federal certificate of confidentiality was obtained. The final sample for the present manuscript comes from the baseline survey.

2.4 Missing Data

All measures of interest for this paper were completed by 301 participants. For 5 participants (1.6 %), data from one or more responses were missing. However, no differences were found on any of the primary variables of interest between those with complete versus incomplete data. It appears that the subset of participants who provided complete data are representative of the larger sample and thus the full sample ($n = 306$) comprise the sample analyzed below.

3. Results

3.1 Preliminary Analyses: Assault Characteristics

The majority of sexually assaulted participants had experienced an alcohol-involved sexual assault as the worst traumatic event or index trauma (60.1%, $n = 184$) whereas 22.5% ($n = 69$) had experienced a sexual assault that did not involve alcohol. Between the assault groups, there were several significant differences in assault characteristics. In particular, the AIA was higher than then non-AIA group on injuries during the assault, and the non-AIA group was more likely to report coercion as opposed to threat and force during the assault. In addition, AIA victims were significantly less likely to have trusted their assailant prior to the assault, and significantly more AIAs were perpetrated by acquaintances but not previously intimate assailants compared to non-AIAs. AIAs were significantly more likely to occur at a social setting whereas non alcohol-involved assaults were significantly more likely to occur at the victim’s home or outdoors, at school, or in a car. Also, women in the AIA group were significantly more likely to report that the index assault happened in the last three years, compared to women in the non-AIA group. Finally, women in the AIA group reported higher rates of revictimization with victims of AIA reporting significantly more experiences of adult sexual assault compared to victims of non-AIA. Means, standard deviations, percentages, and statistics are presented in Table 1.

3.2 Alcohol Use and Consequences

Means and standard deviations for primary measures are listed in Table 2. Two separate analysis of variance (ANOVAs) were conducted to examine current alcohol use: total weekly drinks and peak BAC. The independent variable was type of assault (AIA, non-AIA, no trauma control). Analyses were performed using SPSS GLM. Total drinks differed significantly by type of assault, $F(2, 298) = 12.78, p < .001$. To examine group differences, we conducted pairwise post-hoc comparisons, with Bonferroni correction for multiple comparisons. A Bonferroni correction was chosen due to the number of comparisons being conducted and to guard against type I error, although this does slightly increase the risk of type II error. Based on the post-hoc comparisons, the AIA group reported higher total weekly drinks than either the non-AIA or control group. Peak blood alcohol level also differed significantly by type of assault, $F(2, 298) = 9.66, p < .001$. Based on the post-hoc comparisons, the AIA group had significantly higher peak BAC than the non-AIA and a trend towards higher peak BAC compared to the no trauma control group.

Analysis of covariance (ANCOVA) was used to examine alcohol-related negative consequences by type of assault. Total weekly drinks and peak blood alcohol were used as covariates due to the documented relationship between higher alcohol consumption and higher consequences. After adjustment by covariates, both of which were significantly associated with drinking consequences in this dataset, drinking consequences differed significantly by type of assault, $F(2, 296) = 7.38, p < .005$. Based on planned contrasts, both the AIA and non-AIA groups had higher numbers of drinking consequences than the no trauma control group but the two assault groups did not differ from one another.

3.3 Alcohol Expectancies

Multivariate analysis of variance (MANOVA) was used to look at both negative (three subscales: cognitive behavioral impairment, risk aggression, and self-perception) and positive (four subscales: sociability, tension reduction, liquid courage, and sexuality) expectancies. The groups did not differ on negative expectancies $F(6, 592) = 1.29, ns$. However, the groups did differ on positive alcohol expectancies $F(8, 590) = 1.97, p = .05$. Follow-up analyses showed that the groups significantly differed on sociability $F(2, 298) = 5.20, p < .05$, liquid courage $F(2, 298) = 3.21, p < .05$, and sexuality $F(2, 298) = 3.23, p < .05$, with the AIA group being higher than the no trauma control group on all three subscales. There were no differences between groups on the univariate analysis for tension reduction $F(2, 298) = .09, ns$.

3.4 Sensitivity Analyses

In order to take into account the influence of assault characteristics on drinking behavior we conducted follow-up sensitivity analyses. Specifically, we compared the assault groups (AIA versus non-AIA) on our main outcomes (drinking days, peak BAC, drinking consequences, and alcohol expectancies) controlling for assault characteristics. We selected assault characteristics to include in our statistical tests using the following criteria (Tabachnik & Fidell, 2000): (1) significant differences between assault groups; (2) significantly correlated with outcome variables; (3) not significantly correlated with each other. Using these criteria we included reports of injuries, number of adult sexual assaults, trust in the perpetrator prior to assault, and length of time since assault in our sensitivity analyses. Using ANCOVA and MANCOVA we found no difference in findings when including these covariates. Specifically, the AIA group continued to have higher total drinks ($F(1, 245) = 7.57, p < .01$) and higher peak BAC ($F(1, 245) = 7.61, p < .01$) compared to the non-AIA group. Given that the two assault groups did not differ from one another on drinking consequences, positive expectancies, or negative expectancies in the above analyses these outcome variables were not included in the sensitivity analyses.

4. Discussion

The current study examined relations between sexual assault tactics (alcohol-involved versus non-alcohol-involved assaults), assault characteristics, and alcohol outcomes. Results highlight both important differences and similarities in the characteristics and outcomes of AIA and non-AIA victims. With regard to assault characteristics, AIA assaults were more severe in terms of injuries and use of force, and were less likely to be perpetrated by an intimate partner. This is in marked contrast to studies that have found reduced levels of injury and force associated with AIA or have found no difference in degrees of force and injury (Abbey, et al., 2004; Clum, Nishith, & Calhoun 2002; Kaysen et al., 2010; Littleton et al., 2009; Zinzow et al., 2010). Part of the difference in these findings may be a function of how AIA was defined. The majority of studies comparing AIA assaults to non-AIA assaults do not ensure that the index assault is the AIA. Rather, these studies tend to compare most recent assaults or compare lifetime histories of AIA and other assaults. It seems likely that by assessing for most distressing events we are more likely to see reports of injury and force. This suggests that future studies should be careful to delineate lifetime and most distressing assault experiences as it may influence reports of assault characteristics.

In general, victims of AIA knew their assailants less well than victims of non-AIA, replicating a previous finding by Littleton and colleagues (2009). In line with this, AIAs were more likely to occur in a public place than non-AIAs. These findings have important implications for assessing and intervening to decrease overall level of risk for assault. Informing women of the increased likelihood of AIAs occurring by acquaintances and in public places may help women decrease their risk of assault when they drink by choosing to drink with people they know well, having a buddy system, and monitoring their number of drinks. Given the relationship between alcohol and risk of assault, as well as the higher rates of revictimization for victims of AIA compared to non-AIA, this suggests that addressing drinking behaviors may be one way to reduce rates of sexual assault.

In general, our study found that sexual assaults were associated with negative drinking outcomes. Specifically, this study replicates previous findings that women exposed to AIA report greater alcohol use following the assault (Kaysen et al., 2006; Littleton et al., 2009; McCauley et al., 2009) as compared to both non-AIA victims and women with no history of trauma exposure. This finding remained even after controlling for differences in assault characteristics such as injury, revictimization, and time since assault. In contrast to these differences in drinking outcomes, assault victims, regardless of whether or not alcohol was involved in their assault, reported more drinking consequences than non-trauma exposed women. This suggests, regardless of whether alcohol was involved in the assault that victims tend to use alcohol at a problematic level following the assault experience. This is concerning and highlights a potential area for intervention in female assault victims. In particular, it points to the need to not only assess level of drinking, which was elevated in AIA victims, but also detrimental consequences of drinking to fully identify women who would benefit from strategies to reduce problematic use. Although this study is cross-sectional and cannot comment on course of drinking behavior, it seems quite possible that this elevated drinking behavior is a pre-existing risk factor given the documented relationship between alcohol use and vulnerability to assault (Ullman, 2003).

Similarly, this study replicates the one existing study on AIA and alcohol expectancies (Marx et al., 2001) in finding that victims of AIA endorsed more positive expectancies about alcohol use than non-victims, although differences were small. One explanation for these differences may be that these are pre-existing traits that lead to higher and riskier drinking behavior among young adult women, and potentially increases the risk of assault. For example, positive expectancies about alcohol as “liquid courage” may lead to increased

intoxicated risk taking which may put victims in situations where they are more likely to experience an assault. Indeed, in this data we found elevated rates of revictimization in the AIA group who reported more adult sexual assault experiences than the non-AIA group. It is possible that more positive alcohol expectancies, especially about sexuality, sociability, and bravery may increase risk of revictimization. Alcohol use has been found to mediate the relationship between prior trauma and later revictimization in a prospective study of college women (Messman-Moore et al., 2008). Since the present study is a cross-sectional study, additional longitudinal studies should examine expectancies prior to and after assault to examine whether the present findings may be pre-existing factors or a result of assault. It is also possible that AIA may increase positive alcohol expectancies. For example, post-assault, women may begin to drink to gain confidence or reduce anxiety in social situations, thereby strengthening positive alcohol expectancies.

It is important to note that regardless of whether or not heavy drinking and positive expectancies exist pre-assault, something we cannot determine with this data, they do seem to continue even after a negative experience such as an AIA. This is inconsistent with theories of trauma conditioning, where we expect trauma cues (e.g., alcohol during an AIA) to be highly avoided and associated with negative interpretations (e.g., Foa & Kozak, 1988; Foa, & Rothbaum, 1998; Resick, 2001). In addition, we found that tension reduction was the only positive expectancy that did not significantly differ by assault type. While this is consistent with past research (Marx et al., 2001) it is again inconsistent with theories that suggest alcohol is used following assault as a self-medication coping strategy to avoid anxiety and other distressing emotions (e.g., Chilcoat & Breslau, 1998a, 1998b; Saladin et al, 1995; Simpson, 2003; Stewart, Pihl, Conrod, & Dongier, 1998). One possible explanation for this finding is that our sample was not selected for having trauma-related symptoms (e.g., PTSD) and was selected for being heavier drinkers. Thus the sample may have been relatively low in distress. The combination of these factors may have restricted our ability to see significant associations due to ceiling or floor effects and future studies should see whether these findings generalize to more severe, clinical samples.

This study has several limitations that should be noted. First, as mentioned above, the design is cross-sectional and thus we cannot comment on course of drinking and relationship to assault. Future studies using prospective designs are needed to determine the relationship of assault and alcohol use over time. In addition, we used a non-clinical sample which may inhibit our ability to generalize results of this study to clinical settings. However, it should be noted that to our knowledge this is the first study to specifically use women who identified an AIA as their most traumatic experience in comparison to women who had experienced an assault, but never one that involved alcohol. This allowed for more distinct groups and comparisons. However, it should be noted that while this is a strength of the current study it might also be considered a limitation. By selecting the worst event we may have biased some of our findings, particularly in terms of assault characteristics such as injury and threat of death as it might be expected that the worst event will be perceived as more severe, although participants chose the most distressing experience and they did not always indicate the assault with the greatest elements of force and/or injury as their worst event. Third, we did not specify amount of use during assault when looking at our AIA group as this would have restricted our sample size. Thus, this group may contain varying degrees of under the influence of alcohol (e.g., incapacitated versus impaired). However, it is important to note that the level of reported alcohol use during assault was quite high (average of seven drinks), indicating that most of the women in this group were likely to have high BAC levels and almost all reported binge drinking. Thus, we can be more confident in this group representing victims of AIA. Finally, our use of a control group that denied any experiences of Criteria A traumatic events may reduce generalizability of the findings, as it ensured a group of women with less trauma exposure than is common in the

US (e.g., 70% of the US population reports exposure to at least one Criteria A event; Kessler et al., 1995). In addition, the use of a control group with no trauma exposure makes it impossible for us to conclude whether differences between our assault and control groups are due to a lack of sexual assault experiences specifically, or a lack of trauma exposure more generally. However, it should be noted that this is one of a few studies who use a control group to look at differences in drinking behavior and thus still provides an important contribution to the literature.

Overall, this study expands on the existing, small literature on victim alcohol use during assault and relationship to outcome by highlighting both similarities and differences between AIA victims, non-AIA victims, and non-victims. Overall, it is important to keep in mind that assault experiences may not uniformly lead to similar outcomes and assaults that involve alcohol may imply particular alcohol related consequences. Notably, victims of AIAs reported greater drinking behavior than either non-victims or victims of non-AIAs and more positive expectancies about alcohol use than non-victims. This suggests that they are a particularly vulnerable group of women in terms of drinking behavior following assault. These findings further suggest that victims who were under the influence of alcohol during assault might benefit from intervention efforts aimed at decreasing drinking behavior, an especially important factor to consider given the documented relationship between assault, post-assault drinking behavior, and poor prognosis.

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Research Highlights

- Women with an AIA report more alcohol use than women with a non-AIA or no trauma
- Women with an AIA report more positive expectancies about alcohol
- Women with an assault history report more drinking consequences
- AIAs and non-AIAs differ in assault characteristics (e.g., severity, location)

Table 1

Assault Characteristics for AIA and Non-AIA participants

	AIA (<i>n</i> = 184)		Non-AIA (<i>n</i> = 69)		Statistic	<i>p</i> -value
	<i>n</i>	%	<i>n</i>	%		
Assault Tactics						
Threat/force	21	11.4	11	15.9	$\chi^2 (1) = .93$	<i>ns</i>
Coercion	91	49.5	64	92.8	$\chi^2 (1) = 39.64$	< .001
Relationship with Assailant					$\chi^2 (2) = 42.27$	< .001
Strangers	68	37.0	8	11.6		
Acquaintances	75	40.8	21	30.4		
Intimate partners	24	13.0	35	50.7		
Location of assault (%)					$\chi^2 (3) = 34.03$	< .001
Bar, restaurant or party	46	25.0	1	1.4		
Friend's house	69	37.5	19	27.5		
Victim's home	31	16.8	25	36.2		
Outdoors, school, in car	15	8.2	16	23.2		
Time since assault (%)					$\chi^2 (2) = 14.35$	< .005
Less than 6 months	36	19.6	14	20.3		
6 months – 3 years	107	58.2	24	34.8		
More than 3 years	41	22.3	31	44.9		
Injury [M (<i>SD</i>)]	.48 (.80)		.14 (.39)		$F(1, 251) = 11.25$	< .005
Threat of injury/death [M (<i>SD</i>)]	.25 (.84)		.21 (.59)		$F(1, 243) = .15$	<i>ns</i>
Trusted assailant [M (<i>SD</i>)]	2.18 (1.49)		3.30 (1.35)		$F(1, 249) = 30.11$	< .001
Revictimization [M, (<i>SD</i>)]	3.47 (2.59)		1.81 (1.23)		$F(1, 251) = 26.17$	< .001

Table 2

Means and standard deviations by group for all outcome measures

	AIA (<i>n</i> = 184)	Non-AIA (<i>n</i> = 69)	Control (<i>n</i> = 53)
	<i>M</i> (<i>SD</i>)	<i>M</i> (<i>SD</i>)	<i>M</i> (<i>SD</i>)
Total Drinks (DDQ)	12.38 _a (6.83)	8.07 _b (5.32)	9.88 _b (5.12)
Peak BAC	.22 _a (.10)	.16 _b (.08)	.18 _{a,b} (.09)
CEOA- Negative Expectancies			
Cog-Beh Impairment	24.05 (3.76)	22.93 (4.51)	22.79 (4.73)
Risk Aggression	13.81 (2.11)	13.39 (2.22)	13.19 (2.10)
Self-perception	11.72 (2.17)	11.17 (2.38)	10.94 (2.21)
CEOA- Positive Expectancies			
Sociability	21.05 _a (3.95)	20.04 _{a,b} (4.27)	19.17 _b (3.95)
Tension Reduction	7.34 (1.83)	7.33 (1.89)	7.21 (1.88)
Liquid Courage	14.02 _a (2.51)	13.71 _{a,b} (2.76)	12.96 _b (3.05)
Sexuality	12.13 _a (1.85)	11.86 _{a,b} (2.20)	11.37 _b (2.00)
RAPI- Drinking Consequences*	5.77 _a (4.95)	3.65 _a (4.17)	2.44 _b (2.51)

Note. Means that do not share subscripts significantly differ at the $p < .05$ level.

* Drinking consequences were adjusted for level of alcohol consumption in analyses: AIA adjusted $M = 5.26$, $SE = .30$; non-AIA adjusted $M = 4.68$, $SE = .49$; control adjusted $M = 2.84$, $SE = .55$