Alcohol-Involved Sexual Assault and Mental Health Outcomes: The Role of Alcohol Use Characteristics

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Abstract

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College is a period of heightened risk for alcohol-involved sexual assault (AIA). The overarching aims of this project were to describe and evaluate variations among alcohol use characteristics (AUCs) during AIAs and how AUCs relate to assault severity, post-assault alcohol use, and mental health outcomes. All findings are based on cross-sectional surveys given to underage college women between the ages of 18 to 20. Study 1 identified different AIA patterns based on participants' sexual assault history and AUCs during an index AIA. Study 2 supported four hypotheses that (1) AUCs, (2) consuming four or more drinks within a two-hour period (HED), and (3) party venues were associated with worse assault severity (likelihood of penetration, injury, and distress), and that (4) AUCs were highest for AIAs at parties. Finally, Study 3 supported four hypotheses: (1) women with any sexual assault history reported worse mental health than those without; (2) women with an AIA history reported the worst alcohol use outcomes of all participants; (3) among women who had experienced an AIA, higher AUCs were linked to worse post-assault drinking; that (4) links between AUCs and outcomes were mediated by assault severity. Taken together, findings indicate that examining AUCs during sexual assault may enrich our understanding of alcohol's role in the assault and post-assault outcomes.

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Introductory Overview:

Alcohol-Involved Sexual Assault and Mental Health Outcomes:

The Role of Alcohol Use Characteristics

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Sexual violence against women is a widespread phenomenon throughout society. Despite extensive research, important aspects of sexual assault remain incompletely understood, including – surprisingly – the role of alcohol use. Adult sexual assault (ASA) involves a range of unwanted sexual actions taken against someone, from unwanted sexual contact to attempted or completed penetration, occurring since the age of 14 (Koss, 1982). Among college women in particular, sexual assault rates are remarkably high with as many as 75% of college women reporting an experience of ASA (Abbey, Parkhill, & Koss, 2005). ASA experiences are linked to a number of negative mental health consequences for college women (Tjaden & Thoennes, 2006), and for this reason, reducing college sexual assault has become a growing public health concern. In January of 2014, President Obama issued a presidential memorandum to call for the creation of a "White House Task Force to Protect Students from Sexual Assault" to address the alarmingly high prevalence of sexual assault among college students (whitehouse.gov, 2014). Strikingly, an aspect of sexual assault unaddressed by this memorandum is the role of alcohol in college sexual assault.

Alcohol and sexual assault among college women are often concomitant with rates ranging from 70-85% of college sexual assaults involving alcohol (Reed et al., 2009; Core Alcohol and Drug Survey, 2005; Abbey et al., 2004). Researchers have repeatedly suggested that there may exist psychological features and sequelae of sexual assault that are unique to alcohol's involvement (e.g., Abbey et al., 2004). As our understanding of alcohol-involved sexual assault (AIA) has grown, however, few reliable systematic differences in post-assault experiences

between survivors of AIAs and survivors of non-AIAs have been identified. Furthermore, within AIAs, there seems to be the potential for a wide range of varied experiences leading to variable outcome trajectories. Among the current research, studies have highlighted how AIAs may differ from non-AIAs in terms of assault characteristics such as location and likelihood of penetration and injury (Abbey et al., 2003), as well as post-assault mental health outcomes, specifically excessive alcohol use (Bedard-Gilligan et al., 2011). Missing from this research, however, is a clear focus on the amount of intoxication during the sexual assault and what role it has in any of these experiences and their sequelae. The wide majority of studies examining AIAs have instead focused exclusively on alcohol's dichotomous presence or absence during the assault. The small number of studies that have evaluated intoxication have relied on subjective descriptive ratings of level of intoxication, providing limited – albeit enlightening – results that there may be a wide range of intoxication levels during AIAs (Littleton et al., 2009). Thus, crucial questions remain unanswered about what variations in alcohol consumption exist at the situational level during an AIA. For example, are there detectable differences in assault severity based on amount of alcohol consumed during the assault? How does sexual assault severity vary based on perpetrator drinking and victim drinking? Finally, how might understanding variations in alcohol use characteristics (AUCs) inform our understanding of post-assault experiences and sequelae?

It is conceivable that AIAs are not only a prevalent form of sexual assault, but also a potentially different phenomenon qualitatively from non-AIAs. Broadening our understanding of AIAs has far-reaching implications, ranging from improving our overall assessment of AIAs to shaping and informing public policy, forensics, as well as prevention of AIAs. Much more research is needed to understand differences between AIAs and non-AIAs, a persistent knowledge gap due to limitations in assessment of AUCs during AIAs. As the literature currently

stands, at least three important questions remain: Could the level of alcohol consumption at a situational level during a sexual assault be related to other characteristics of the assault, such as: 1) assault severity; 2) alcohol use outcomes, and 3) mental health outcomes for the survivor? The three studies described will lay the groundwork for unraveling, with greater precision, what impact alcohol consumption by the victim, the perpetrator, or both, has on sexual assault and post-assault experiences. The first study examined variations in AUCs during college sexual assaults and whether different AIA patterns are discernible based on AUCs and victimization history. The second study will focus on how AUCs during AIAs relate to assault severity, hypothesizing that intoxication level increases assault severity, specifically, the likelihood of penetration and injury. Finally, the third study will compare three groups – women with AIAs, those with non-AIAs, and those without sexual assault histories, hypothesizing that women with any assault history would report worse mental health outcomes than women without a sexual assault history, and that specifically women with an AIA history would report the worst alcohol use outcomes. The project will conclude with study 3 evaluating the hypothesis that post-assault alcohol use outcomes for women with an AIA history are related to alcohol's role in assault and specifically are mediated by the severity of experiences during an assault.

Study 1:

Alcohol Use Characteristics during Sexual Assault:

What Variations Exist and What Patterns Emerge during Alcohol-Involved Sexual Assault Experiences?

Abstract

Alcohol and sexual assault among college women are often concomitant with rates ranging from 70-85% of college sexual assaults involving alcohol (Reed et al., 2009; Core Alcohol and Drug Survey, 2005; Abbey et al., 2004). The current literature provides a limited understanding of alcohol use during sexual assault, and the question remains: Could the level of alcohol consumption at a situational level during an AIA be related systematically to other characteristics of the assault such as severity? This study examined cross-sectional, retrospective survey reports from underage college women on the most recent AIA event experienced by participants, and evaluated alcohol's role by examining multiple continuous AUCs. AUCs included estimated blood alcohol concentration (BAC) of the survivor at the time of the assault, heavy episodic drinking (HED; defined as consuming four or more drinks within a two-hour period for women) prior to the assault, reports of subjective intoxication, memory impairment, motor impairment, and subjective estimate of perpetrator intoxication. Specifically, this study sought to accomplish two goals: 1) to present descriptive information about how AUCs vary among AIAs and 2) to identify AIAs patterns, using latent class analysis, based on AUCs, other assault characteristics, and victimization history. Results demonstrate a range of alcohol use during AIAs, as well as highlight implications for future assessment of AUCs. The findings from this study also suggest distinct AIA patterns based on a woman's victimization history, as well as AUCs during the event. The findings have implications for post-assault experiences such as rape acknowledgement, self-blame, and distress about the event.

Alcohol Use Characteristics during Sexual Assault:

What Variations Exist and what Patterns Emerge during Alcohol-Involved Sexual Assault Experiences?

College is a period of marked increased risk for alcohol-involved sexual assault (AIA) among women. Research has found that as many as 50-75% of women in college will experience some form of sexual assault with 15-18% of these assaults involving completed rape (Abbey, Parkhill, & Koss, 2005). An overwhelming majority of these assaults, 70%-82%, involve alcohol use by the victim and/or perpetrator (Reed et al., 2009; Core Alcohol and Drug Survey, 2005). Although women remain at risk throughout all years of college, freshman year in particular has consistently exhibited the highest rates of sexual assault with as many as 31% of women experiencing a sexual assault during their first year (Abbey, 2002; Howard et al., 2008; Humphrey & White, 2000). As a transitional period associated with a high risk for both drinking initiation and heavy drinking and with reduced parental supervision, it is not surprising that alcohol use and sexual assault frequently coincide during early college (Mallett et al., 2011; Baer, 2002). The research suggesting that AIAs frequently happen during freshman year of college also highlights the potential relationship between AIAs occurring within the context of underage drinking. As a growing public health concern, multiple review studies and preeminent researchers in the field of college sexual assault have highlighted the need for research into the precise nature of AUCs during sexual assault situations at an event-level (Ullman, 2003; Abbey et al., 2004; Testa et al., 2000). However, currently there remains little to no information available in the literature about level of alcohol use during AIAs. While research has repeatedly confirmed that alcohol's presence matters in the discussion of sexual assault, the current study

will seek to answer an equally important yet often ignored follow-up question – does how much one drinks matter?

Overall alcohol use is frequently confirmed as a risk factor for experiencing sexual assault (Abbey et al., 2004; Testa & Livingston, 2009). In fact, sexual assault rates within a 3-month period are doubled for women who report weekly heavy episodic drinking (HED; defined as consuming four or more drinks within a two-hour period for women), compared to women who do not report weekly HED (NIAAA, 2004; McCabe, 2002; Weschler et al., 1998; Mouilso, Fischer, & Calhoun, 2012). Additionally, women with an AIA history may be at heightened risk for problematic drinking following an assault compared to women who have experienced a non-AIA (Bedard-Gilligan et al., 2011). Regardless of a woman's alcohol use, research has consistently found that sexual assault survivors, regardless of type of history, are twice as likely to be re-assaulted as non-victims (Classen, Palesh, & Aggarwal, 2005; Gidycz et al., 1993, 1995). It is possible that one avenue for increased risk of re-victimization could be post-assault heavy alcohol use (Testa et al., 2005; Testa et al., 2010). However, research has failed to illuminate whether drinking heavily overall increases a woman's risk for experiencing a sexual assault due to more exposure to perpetrators within drinking situations, or if amount of alcohol use during an event uniquely predicts AIA likelihood. Further, while event-level studies have consistently verified alcohol's involvement during sexual assault – with both perpetrator and victim drinking (Abbey, 2002; Frintner & Rubinson, 1993; Gray, Lesser, Rebach, Hooks, & Bounds, 1988; Koss, Dinero, Seibel, & Cox, 1988), this research has predominantly only examined the presence versus absence of alcohol. It is crucial for college prevention programming to gain increased understanding of how amount of alcohol consumed during event

impacts post-assault experiences and sequelae, including seeking services, self-blame, and distress about the event.

Despite this overall knowledge gap, a handful of studies have suggested there may be value in evaluating variations of intoxication during AIAs. These studies have specifically focused on subjective reports of intoxication. An early study conducted by Muehlenhard & Linton (1987) showed that romantic dates where women reported feeling "moderately to extremely intoxicated" were more likely to involve AIA than dates where women reported being mildly intoxicated. Harrington and Leitenberg (1994) found that 55% of college women reported being "somewhat drunk" at the time of an AIA. Additionally, Littleton and colleagues (2009) indicated that 37% of college sexual assault survivors reported being intoxicated to the point of cognitive and physical impairment at the time of the attack. This limited number of studies indicates there are variations in levels of intoxication during an AIA and underscore the hypothesis that variations in intoxication during an AIA could lead to different assault experiences. However, these studies utilized subjective indicators of intoxication and did not include more objective indicators such as specific quantity of consumption and estimated blood alcohol content (BAC). Therefore, a foundational aim of this study was to collect comprehensive information about how intoxication level indicators – estimated BAC, HED during assault, subjective intoxication, motor and memory impairments – vary among AIAs.

Current Study

The current literature provides a limited understanding of alcohol use during sexual assault, and the question remains: Could the level of alcohol consumption at a situational level during an AIA be related systematically to other characteristics of the assault such as severity? This study examined the most recent AIA event experienced by participants and evaluated the role of

alcohol use by examining multiple continuous AUCs based on the participant's most recent AIA. AUCs encompass estimated blood alcohol concentration (BAC) of the survivor at the time of the assault, HED prior to the assault, reports of subjective intoxication, memory impairment, motor impairment, and subjective estimate of perpetrator intoxication. Specifically, this study sought to accomplish two goals: 1) to present descriptive information about how AUCs vary among AIAs and 2) to identify patterns of AIAs based on AUCs and other characteristics during the event, using latent class analysis.

Method

Participants

A total of 407 participants responded to this study's anonymous survey. Eligible participants were: (a) female, b) enrolled in college, and c) were between the ages of 18 and 20, in order to recruit specifically for college women who were under the legal drinking age of 21-years-old in the United States. Notably, eligibility criteria did not require that participants endorse current alcohol use or sexual activity, as this study sought to recruit a broad sample of underage college female students in order to understand their variety of experiences. Participants were recruited from introductory psychology courses for a study about "alcohol use and sexual behaviors", and all participants were provided with course credit for completing the survey. All participants were informed that the survey would assess questions related to alcohol use and sexual experiences and take approximately 90 minutes to complete; information about the sensitive nature of the questions as well as confidentiality of responses was provided. Of the 407 participants, 137 endorsed a history of AIA. Only these participants were included in the present analyses.

Participants were 18.82 years old on average (*SD* = 1.86). The majority (66.0%) had been in college for less than a year, endorsed not being a member of a sorority (63.6%), spoke English as a first language (63.6%), and reported living on campus (75.4%). The majority were White (41.8%) or Asian American/Pacific Islander (43.3%) and 7.6% were multiracial, 2.9% identified as "Other", 1.5% were Black/African American, 1.5% were Middle Eastern/North African, and 0.7% identified as American Indian/Alaska Native. Additionally, 6.1% of participants identified as Hispanic/Latina.

Procedure

The study was advertised through the University's mechanism for college research participation, specifying that only female students between the ages of 18-20 years old were eligible to complete the survey. Through this mechanism, students are provided with an electronic list of all active University research. After selecting this study's survey, prior to receiving the informed consent electronic page, students were asked if they were 1) female and 2) between the ages of 18-20. Once participants confirm their eligibility, they were directed to the link for the study's survey, specifically the electronic informed consent page. The informed consent included detailed information about the sensitive nature of the questions included in the survey, information about the length of the survey (approximately 90 minutes), and information about risks and benefits of participating. As all participants completed the survey at a location of their choosing, the informed consent also suggested that participants' may choose to complete the survey in a private area, although this was not a specified requirement. The Institutional Review Board, housed within the Human Subjects Division at the location where this research was conducted, approved all aspects of this study. After participants indicated their consent to participate in the study, they were first asked to respond to demographic questions, followed by

typical drinking behavior, and last by sexual assault history. Only participants who endorsed experiencing an alcohol-involved sexual assault were presented with event-level questions about the assault. All other participants responded to questions about their typical alcohol use during sexual behavior. Participants responded to all the measures in the survey in the same sequential order. At the end of the survey, all participants were provided with resources for the mental health center at their university, the crisis hotline, and various local sexual assault resources, regardless of their responses.

Measures

Sexual Assault History. Using the Sexual Experiences Survey (Koss et al., 2007), participants were asked to indicate if they had had coerced sexual experiences at two time points: 1) After their 14th birthday, but before entering college, and 2) Since entering college. The SES is a behaviorally specific assessment of sexual assault experiences and it includes experiences perpetrated by verbal coercion, incapacitation, threats of physical force, and physical force. Sexual assault experiences include sexual contact, attempted penetration, completed penetration, oral sex, and anal sex. Participants were asked to indicate the number of times that a tactic or multiple tactics were used for each of the experiences (0 = *0 times*, 1 = *1 time*, 2 = *2 times*, and 3 = *3 or more times*). This measure was used to assess sexual assault history, and if participants indicated any history of sexual assault, they were coded as having a positive sexual assault history.

Participants were also asked to complete the Childhood Sexual Experiences Measure (Finklehor, 1979). This questionnaire asks participants to report on their history of sexual experiences, ranging from touching to penetration prior to 14-years-old. Participants are also

asked to indicate the number of times each experience occurred. Participants were coded as either having a childhood sexual assault history or not.

Index Assault. Based on the Sexual Experiences Survey described above, all participants were asked to report on the number of times different experiences (including unwanted contact, attempted vaginal sexual intercourse, completed vaginal sexual intercourse, oral sex, and anal sex) occurred, "When you were incapacitated (for example, by drugs or alcohol), and unable to object or consent". Those who endorsed any of these experiences were presented with the instructions that, "The following questions ask you for information about alcohol use during the most recent event you identified during which you were incapacitated (for example, by drugs or alcohol) and unable to object or consent to sexual behavior". This included participants who endorsed experiencing an assault prior to college and since of the age of 14, as well as those who indicated experiencing an assault since entering college. The following questions asked for information related to both AUCs and severity of this index event.

Alcohol Use Characteristics. AUCs during the index sexual assault were assessed using a variety of questions that have previously been used in our lab as well as a broad array of questions to gather information about alcohol's involvement during the event (George et al., 2014; see Appendix A). Participants were provided with information about standard drink size and asked to report how many standard drinks they consumed during the event, as well as over how many hours they consumed the drinks. They were further asked if they consumed four or more drinks within two hours to assess if HED occurred (NIAAA, 2014). Participants were asked to identify their subjective intoxication during the event, based on responses ranging from "sober" to "extremely intoxicated", as well as to indicate if they experienced memory impairment and/or motor impairments during the assault (yes/no). If the participants responded

"yes" to either question, they were asked how severe the memory or motor impairments were. For motor impairments, response options ranged from "mild" to "extreme". For memory impairments, response options ranged from "no memory loss" to "complete memory loss" (see Appendix A). In order to calculate BAC, participants were also asked to report their weight and the number of hours during which they consumed the number of drinks they reported. The number of drinks reported and participant weight in pounds were both converted to grams in order to use the equation, "[Alcohol consumed in grams / (Body weight in grams x r)] x 100" to calculate BAC. In this formula, "r" was the gender constant, set at 0.55 for females (Winek, Wahba, & Dowdell, 1996). Participants were also asked about the location of the event, including if it happened "at a party", "at a bar", or "at home". Participants were further asked to recall if the perpetrator was drinking (yes/no) and, if so, to estimate how intoxicated the perpetrator was with responses ranging from "sober" to "extremely intoxicated".

Assault Severity. Related to severity of the index event, participants were asked to indicate either "yes" or "no" if penetration occurred during the event. They were further asked to indicate "yes" or "no" if injury occurred, and if they indicated "yes", they were asked a follow-up question, "what was the most severe physical injury you experienced during this event?" Response options included "minor bruises or scrapes", "worse than bruises or scrapes, but did not require medical treatment", "injuries that required medical treatment", and "injuries that required hospitalization" (see Appendix A). Participants were also asked how they labeled the event with response options including "not victimized", "sexual assault", "rape", or "severe miscommunication". To assess self-blame, participants were asked to respond on a Likert-scale ranging from 0-5 about how much they blamed themselves for the experienced based on two items: 1) their behavior during the event (this included examples such as amount of alcohol they

were drinking, walking alone at night) and 2) their personality (how trusting they are). Finally, participants were asked to report on "how distressed they felt immediately following the event" with Likert-scale response options ranging from 0 (no distress) to 3 (extremely distressed).

Data Analytic Method

For the first aim, descriptive information including means, standard deviations, and percentages of the various AUCs were evaluated to provide foundational information about what variations exist in alcohol use during AIAs. For the second aim identifying patterns of AIAs based on AUCs and other characteristics during the event, the multiple-group latent class approach (LCA; Collins and Lanza, 2010), was used in order to identify classes of women. These classes were based on three areas including if participants reported a previous sexual assault (coded no = 0 and yes = 1), reported alcohol use characteristics during the most recent event (HED, memory loss, motor impairment, perpetrator drinking, location of event; (each coded no = 0 and yes = 1), and assault experiences during the most recent event (if penetration occurred and if injury occurred, and label of event as rape, (each coded no = 0 and yes = 1); high/low distress and high/low self-blame (each coded low = 0 and high = 1 using median split). LCA is an analytic method used to determine underlying groups of individuals based on their responses to specific variables (Collins & Lanza, 2010). Analyses were conducted using Mplus Version 6 (Muthén and Muthén, 1998–2010). Nine variables were entered into the analyses, and classes were added iteratively. We evaluated whether the addition of a class improved model fit in order to determine the appropriate number of classes to maintain. Because there is no consensus on the single best indicator to determine model fit (Nylund et al., 2007), multiple fit statistics were examined. The Akaike information criterion (AIC) and the Bayesian information criterion (BIC) are expected to decrease as the model improves. The Lo Mendell Rubin test (LMR) provides a

test for improvement in model fit for the addition of each class with significant *p* values indicative of improved model fit (Lo et al., 2001). Entropy provides a measure of the extent to which the latent classes are distinct from one another with values closer to 1.00 suggesting improved model fit.

Results

Descriptive Information

A total of 137 (33.5%) participants in the sample reported on an index alcohol-related sexual assault event since age 14. Among these, 84 participants (60.6%) indicated having experienced multiple AIAs, 40 participants (29.2%) reported a history of sexual assault not involving alcohol use, and 20 participants (14.6%) reported a childhood history of sexual abuse. For 40.4% of the participants, the index event they reported on was their first sexual victimization experience. When asked to report on the index event, the average number of drinks reported during this event was 5.17 (*SD* = 2.61) with 105 participants (76.6%) reporting that they engaged in HED during the event. The average estimated BAC during the event was 0.17 (*SD* = 0.13) with 60 participants (43.8%) reporting some amount of memory loss and 75 participants (54.8%) reporting some amount of motor impairment. Twenty-three participants (16.8%) reported using a drug in addition to alcohol during the event with the primary substance reported being marijuana. Related to subjective level of intoxication during the event, 18.6% of participants reported feeling sober during the event, 23.2% of the participants reported feeling mildly intoxicated, 41.9% of the participants reported feeling moderately intoxicated, and 16.3% reported feeling extremely intoxicated. Additionally, 99 participants (72.3%) indicated that the perpetrator was also engaging in alcohol use during the event. Regarding the index sexual assault, 57 participants (41.6%) reported that the event happened during high school and 80

(58.39%) reported that the event happened during college. Of those who reported the event occurred during college, 40 (50.0%) reported that the event occurred on campus. Table 1.2 includes descriptive information about all AUC variables measured.

Latent Class Analysis

Table 1.2 shows model fit statistics for the latent profile analysis. The fit statistics were most improved for the three class model, and therefore this was the model retained based on the data. The LCA was non-significant for the four-class solution and above, indicating that the addition of the fourth and subsequent classes did not improve model fit beyond the three-class solution. The relative decrease in the AIC from the two-class to the three-class solution suggests slightly better fit, and the increase from three-class to four-class model for both AIC and BIC further supports the slightly stronger fit of a three class model. Taken together, these results suggest that the three-class solution should be retained. In addition, the three-class solution was associated with the highest entropy value, indicating that this model more clearly distinguished among the groups according to their AUCs. Finally, while the LMR was significant for both the two- and three-class models, given the combined evaluation of the fit statistics, the three-class model was supported as the best fit of the data.

Probabilities observed for the variables included in the latent profile analysis are presented in Figure 1. Classes 1 and 3 were both characterized as not having sexual assault histories prior to this event and also endorsing that the event occurred at a party. Class 2 was characterized as having a sexual assault history and endorsing that the event occurred at home (either their home or the perpetrator's home). All classes reported low probability of injury and moderate probability of penetration. Class 1, labeled the "newly victimized/high alcohol group", captured the largest number of participants (53.3%) and was characterized by a high probability

of endorsing more drinking across all AUCs (endorsing HED, motor impairment, memory loss, perpetrator intoxication) and low probability of negative reactions (low distress, self-blame, and labeling). Class 2 (15.8%), labeled the newly victimized/low alcohol group, characterized by low probability of endorsing excessive drinking across all AUCs and high probability of negative reactions (distress, self-blame, labeling). This group was the highest specifically on probability of self-blame. Class 3, labeled the re-victimized/high alcohol group (30.9%), was characterized as mostly moderate AUCs, except for high probability of perpetrator intoxication, and high probability of negative reactions specifically for distress and labeling, while they exhibited a lower probability of reporting self-blame.

Discussion

The fundamental goal of this study was to describe variations in alcohol use during AIAs and if/how these variations relate to assault experiences. This study is a first of its kind to not only present comprehensive information about the nature of alcohol use during an AIA, but also to do so among a group of underage college women. Descriptive analyses revealed an unanticipated apparent disconnect between reported consumption and reported intoxication during the event. While these two measures were significantly correlated, the correlation was in the small to medium range and the scores suggest some differences in reported percentages of subjective level of intoxication compared to reported BAC (see Table 1.2). Class analyses identified three AIA patterns characterized by systematic differences in AUCs and assault experiences. This study confirms previous research suggesting that there may be variations in level of intoxication during AIAs (Littleton et al., 2009), while also highlighting the role of contextual factors such as location (Parks et al., 1999), and sexual assault history (Macy, Nurius, & Norris, 2007). What this study adds to the existing literature is descriptive information about

AUCs, as well as information about how AIAs may categorically vary based on assault history and level of intoxication.

One of the most interesting findings that emerged from the descriptive analyses is the conflicting information among BAC, number of drinks reported, and subjective reports of intoxication. The average BAC reported during the event was .17 with participants reporting consuming on average approximately five drinks over two hours. Three quarters of participants endorsed engaging in HED, which is consistent with previous research suggesting the overall high rates of HED among college women linked with sexual assault risk (McCabe, 2002; Weschler et al., 1998; Mouilso, Fischer, & Calhoun, 2012). At a BAC of .17, more than half of the participants would have been at risk for experiencing severe memory loss; however, less than 1/4th of participants reported moderate to severe memory loss. Furthermore, 41.8% of the sample reported subjectively feeling "sober" to "mildly intoxicated". This finding not only indicates considerable variation in self-reported alcohol use during sexual assault, but also highlights that participant reports of subjective intoxication may provide a different type of information on their perceived impairment compared to number of drinks and/or BAC.

The primary mode of evaluating level of intoxication during AIAs in the literature has been to ask participants about their subjective level of intoxication (Littleton et al., 2009; Harrington and Leitenberg, 1994; Muehlenhard & Linton, 1987). It is likely that this method of measurement does not fully capture level of intoxication during the event and could be limited in the amount of information it gleans. Although all data in the current study were retrospective, it is possible that asking about number of alcoholic drinks consumed may be a slightly more objective measure of intoxication, while subjective intoxication may be more susceptible to accuracy issues surrounding recall. Further, it is possible that tolerance could lead to a varying

correspondence between estimated BAC and reported subjective intoxication. Interestingly, while the majority of the participants reported that their subjective intoxication was sober to mild, 70.9% of participants reported that the perpetrator was moderately to severely intoxicated. This mismatch suggests some interesting pathways for future research – including the role that perceived perpetrator intoxication has in post-assault coping and self-blame. Furthermore, the large majority of these events occurred at parties with the second largest number occurring at either the woman's or the perpetrator's home. Additionally, of all these events, half of the participants reported that they occurred on campus. This underscores the responsibility that colleges have to integrate alcohol prevention into their consideration of sexual assault prevention, as well as into future research on prevention to consider the role of level of alcohol use in sexual assault. Previous research has suggested that exposure to high-risk locations, rather than level of intoxication, is most linked with risk for experiencing sexual victimization (Parks & Zetes-Zanatta, 1999). It may be that among college women, parties in particular could be high-risk environments.

When evaluating patterns of AIAs, three distinct groups emerged: a newly victimized – high alcohol group, a newly victimized – low alcohol group, and a re-victimized – high alcohol group. Interestingly, all three groups were similar in terms of their experience of penetration and injury during the event. Where they differ, however, is in terms of their "reactions" to the AIA. For example, both the re-victimization – high alcohol group and the newly victimized – low alcohol group reported the highest levels of distress immediately following the event, as well as a greater likelihood of labeling the event as a sexual assault or rape. Despite differences in their reported alcohol use, these two groups also both shared low reported memory loss in common. It is possible that less memory of the event could actually be protective in terms of distress, as well

as rape acknowledgement and self-blame. Additionally, the re-victimized – high alcohol group reported the highest rates of perceived perpetrator intoxication, as well as the highest reported levels of self-blame. This suggests that both sexual assault history as well as level of intoxication during the event can play a key role in how a woman experiences an AIA. Women with a sexual assault history may experience unique risk factors related to AIAs that make them more vulnerable to perpetration. The re-victimization – high alcohol group was more likely to report that the event occurred at home (either their home or the perpetrator's), whereas the other two groups were more likely to report that the event occurred at a party. While previous research has emphasized the relationship between sexual assault history and risk for re-victimization (Testa et al., 2010), these findings provide insight into potentially different AIA experiences among women with a victimization history, specifically highlighting the role of perpetrator intoxication and location, as well as post-assault reactions.

Of note, a 4th group capturing re-victimized – low alcohol participants did not emerge from the data. It is important for future research to consider the possibility of this type of AIA, particularly in order to understand how assault history impacts current alcohol use and related risk for re-victimization. Previous research has suggested that women with a previous victimization history who also report lower levels of typical alcohol consumption may use more active resistance in response to aggression than women with a victimization history who report overall higher levels of alcohol consumption (Macy, Nurius, & Norris, 2007). The current study adds insight to previous research on profiles of women who have experienced a sexual assault through suggesting that perpetrator intoxication and location of the event may also be important targets for prevention programming (Macy, Nurius, & Norris, 2007; Macy Nurius, & Norris, 2007). Further, previous research has suggested that among women who both reported high

levels of alcohol consumption during their most recent AIA, women with a more severe victimization history endorse higher levels of self-blame, distress, and assault severity compared to women with less severe victimization history (Macy, Nurius, & Norris, 2007). The current study supports these findings in that the group with a victimization history evidenced the highest self-blame, while also suggesting that lower levels of intoxication among newly victimized women may also contribute to high levels of distress about the event.

The largest group of participants was categorized as the newly victimized – high alcohol group. This group reported high alcohol use across all variables, while reporting the lowest rates of distress about the event and likelihood of labeling the event as a sexual assault or rape. When juxtaposed with the newly victimized – low alcohol group, this suggests that aspects of intoxication such as memory, HED, and perpetrator drinking could impact one's perception of an event. On the surface this may seem to suggest that high levels of drinking foster lower levels of distress about an AIA. However, previous researchers have underscored how reactions to a sexual assault, including if a woman acknowledges what happened as a sexual assault or rape, can have a large impact on both coping as well as post-assault behavior change that could serve to protect a woman from a future sexual assault (Ullman et al., 2011). While the onus for ending sexual violence rests with the perpetrators, these results suggest that perhaps high levels of intoxication could complicate a woman's understanding of a sexual assault. This may correspond with an ambiguous sexual culture that many young college women may face. The findings from this study are consistent with previous research suggesting that while high levels of intoxication may relate to the lowest levels of labeling an event as rape (Kahn et al., 2003). Interestingly, previous research has also found that the highest levels of assault severity are linked to the greatest rape acknowledgement (Bondurant, 2001). The current study builds on this research by

highlighting that specifically high levels of impairment and subjective intoxication my relate to the lowest labeling of the event, while the lower levels of impairment could relate to high distress and labeling regardless of assault severity. More research is needed in order to investigate and understand the uncertainty women may have when determining if to label an event as a sexual assault. For example, is it possible that women with a high level of intoxication during an AIA might be the least likely to seek support post-assault?

Limitations

Given the cross-sectional design of this study, the results should be interpreted with caution. There is also no currently validated measure of AUCs, and this was a further limiting factor in the data collection as there is no research base to build from in terms of what types of questions to ask in order to best assess alcohol use during an AIA. In the current study, all participants reported on an event in which they endorsed "incapacitation", which may have also restricted the range of intoxication in the results to a higher level and limited a wider range of AUCs. Further, all of the findings in this study were based on participants' subjective, retrospective reporting of their AIA experiences. While this methodology is limited in knowing the precise level of intoxication during AIAs, it also provides unique insight into participants' perceptions of the event. A simultaneous strength and limitation of this study was that participants were asked to report on their most recent experience of AIA. While this restricted the data from ascertaining if this was simultaneously the most severe AIA among participants, this approach cast a wide net in terms of typical AIA experiences among college students. Startlingly, by asking about the most recent AIA, this study found that nearly half of the participants who reported on an index event experienced completed rape during that event. Additionally, less than half, 40.6%, reported that this was their first experience of an AIA.

However, less than 1/4th of the participants identified the experience as a sexual assault or rape. This underscores the ambiguity that women might experience following an AIA, particularly an AIA where their BAC may have been within the range of severe memory loss and their perception of the perpetrator may have been that they were "severely intoxicated". Furthermore, this study did not specifically recruit for participants who were drinkers or engaging in HED. Specifically, the only recruitment criteria for this study was that participants be female, currently enrolled in college and between the ages of 18 and 20-years- old. This suggests that AIA experiences frequently occur not only among at-risk drinkers, but also potentially more broadly across a college student body.

Future Directions

At the most basic level, the findings from this study verify that alcohol use does in fact vary widely during sexual assaults. Considering the limitations of the study mentioned above, it is crucial for research to further build upon these findings. This substantiates a pathway for future research endeavors into how amount of alcohol use during sexual assaults relate to a host of assault experiences and outcomes. This includes a need for measurement development in order to most effectively assess for alcohol use during assaults. Additionally, studies need to evaluate the nature of alcohol use and experience of AIAs longitudinally. It is only then that the field can begin to unravel the precise risk that alcohol use enacts on sexual assault. A large number of studies highlight the high rate of negative drinking outcomes specifically for women that have experienced an AIA (Bedard-Gilligan et al., 2012). The emerging patterns of AIAs in the results from this study suggest not only that women with a sexual assault history may have unique risk variables for AIA experiences, but also guides our understanding of how variations in alcohol use during an AIA can relate to post-assault experiences. A next step in furthering our

understanding of AIAs may be to gain more insight into the intersection of sexual assault history and intoxication on post-assault outcomes. It is also important for future research to further assess aspects of AIAs among high-risk groups, such as women who regularly engage in HED, to more clearly determine how this may uniquely increase risk for sexual assault (Parks et al., 2008).

Clinical Implications

This study is among the first of its kind to confirm that variations in alcohol use during sexual assault exist. This suggests that there may be more to AIAs than simply alcohol's presence versus absence and that much more work is needed in terms of improving assessment and understanding of alcohol's role in sexual assault. Additionally, this study provides tentative evidence that there may be distinct AIA typologies. Clinically, this suggests that there may be unique aspects of recovery for women who have experienced an AIA related to their level of alcohol use during the event. A pattern that emerged from the results suggested a relationship between endorsing a sexual assault history and the assault experiences of self-blame, distress, and location. It may be important for college prevention programming to further focus on understanding how to best identify and support potential at-risk groups, such as women entering college with an AIA history. This study focused on underage college women, finding that not only are AIAs occurring frequently, but also occurring in the context of heavy alcohol use on college campuses and at college parties. This provides important insight to guide college prevention and underscores the importance of targeting programming towards specific contexts.

Finally, the results suggest that there may be a link between how a sexual assault is labeled and level of intoxication during the assault. While the newly victimized – high intoxication group may appear to experience the lowest levels of distress and self-blame, it is

possible that they may experience similar long-term post-assault outcomes, regardless of this pattern. Lower rape acknowledgement could hinder this group from accessing services or seeking support related to their experience. This may be a harder to access group and highlights the need for further outreach and education around consent overall on college campuses. These results could also reflect a larger culture of normalizing unwanted sexual experiences within the context of alcohol use, and emphasizes the ambiguous and complicated reaction college women face in sexual situations.

Transitioning from Study 1 to Study 2

As Study 1 demonstrated, there appear to be variations in alcohol use characteristics (AUCs) as well as differences in patterns that emerge amongst AIAs in terms of AUCs. While Study 1 provided groundwork for understanding different patterns of AUCs during AIAs, across the patterns that emerged, all women appeared to experience similar rates of penetration and injury. While utilizing latent class analysis in Study 1 allowed for the evaluation of categorical differences among women based on AUCs, this was limiting in that this analysis forced intoxication into "low" and "high" categories. Therefore, Study 2 focuses on expanding on these findings by evaluating how specific continuous AUCs, such as number of drinks, BAC, and subjective intoxication relate to assault severity and location of the assault.

Study 2:

Alcohol Use Characteristics during Sexual Assault:

A Further Examination of How Drinking Characteristics during Sexual Assault Relate to Assault Severity

Abstract

Research comparing AIAs and non-AIAs suggest that there may be differences in assault severity experiences, such as whether penetration occurs or the location of the event. However, little to nothing is known about how level of alcohol use during an event relates to assault severity. Building on the findings from the first study, this study examined if 1) specific continuous AUCs related to AIA severity, including injury, rape completion, and distress at time of the event, and 2) what AUC and assault severity differences emerged during AIAs based on heavy episodic drinking (HED) and location of the event. This study examined cross-sectional, retrospective survey reports from underage college women on the most recent AIA event experienced by participants. Consistent with the hypothesis that higher reported alcohol use would predict higher rates and degrees of assault severity (H1), results demonstrated that BAC and number of drinks were significantly related to likelihood of penetration, injury, and distress; however, subjective level of intoxication was not related to any of these variables. Analyses further supported that HED was significantly related to injury during the event while unrelated to likelihood of penetration (H2). Finally, results supported the hypothesis that AUCs were the highest at locations related to parties (H3) but failed to support that party location was related to increased risk for injury or penetration (H4). However, support was found that assaults occurring at bars were associated with the lowest rates of distress. These findings provide insight into prevention programming about alcohol's role in sexual assault, as well as highlight the need for further research into how these variables interact to impact assault experiences for college women.

Alcohol Use Characteristics during Sexual Assault:

A Further Examination of How Drinking Characteristics during

Sexual Assault Relate to Assault Severity

Event-level studies have consistently confirmed that alcohol use co-occurs with sexual assault among college women with both perpetrator and victim consuming alcohol during the event (Abbey, 2002; Frintner & Rubinson, 1993; Gray, Lesser, Rebach, Hooks, & Bounds, 1988; Koss, Dinero, Seibel, & Cox, 1988). Heavy episodic drinking (HED; defined as consuming four or more drinks within a two-hour period for women (cite)) in particular has been implicated for its relationship to increased risk for sexual assault (NIAAA, 2004; Greene & Navarro, 1998; Testa et al., 2007). Among college freshmen women who report drinking alcohol, rates for experiencing a sexual assault within a 3-month period are 17% for participants overall and as high as 31% for women who report weekly HED (McCabe, 2002; Weschler et al., 1998; Mouilso, Fischer, & Calhoun, 2012). Alongside increasing risk for sexual assault overall, alcohol's presence during sexual assault has also been linked to higher rates of rape completion, complex findings around experiences of injury, and differences in location of the assault (Testa & Parks, 1996). However, a significant knowledge gap has been identified in the literature (for review see Abbey et al, 2004), such that few studies have specifically focused on how the nature of alcohol use during a sexual assault – specifically level of intoxication - relates to assault experiences (Abbey et al., 2004; Testa & Livingston, 2009). The reason for this lack of research is that the majority of studies to date have relied on dichotomous indicators of alcohol involvement (e.g., had she or he consumed any alcohol). In order to illuminate alcohol's role in assault severity, this study will examine the relationship between level of intoxication and assault experiences such as penetration, injury, and distress.

Assault Severity and Perpetrator Aggression

One of the complicating factors in parsing out differences in severity and aggression related to perpetrator and survivor drinking is that the large majority of AIAs involve both perpetrator and survivor alcohol consumption (Testa & Parks, 1996). Despite the lack of specificity around alcohol use, research has found that overall alcohol's presence is associated with a higher likelihood of a rape being completed (Abbey et al., 2003; Ullman & Brecklin, 2000; Ullman et al., 1999; Giancola & Zeichner, 1995; Koss, 1988), as well as rape by multiple perpetrators in the same event (Gidycz & Koss, 1990). AIAs have also been found to involve more male aggression and victim injury than non-AIAs (Giancola & Zeichner, 1995; Tjaden & Thoennes, 2000). A study directly comparing outcomes of AIAs and non-AIAs found that based on the most distressing sexual assault event a participant had experienced, AIAs overall involved more injuries and more force than non-AIAs (Bedard-Gilligan et al., 2011). However, it has also been suggested that victim drinking may be related to decreased injury (Ullman & Brecklin, 2000), suggesting that differences may exist in assault severity depending on which person is consuming alcohol. At extremely high levels of victim intoxication, the victim's motor impairments may require less force by the perpetrator in perpetrating the assault. This may in turn also account for differences in injury, such that at lower levels of intoxication, more forceful tactics may be linked to higher victim resistance and thus increased amounts of injury (Ullman & Brecklin, 2000). In fact, research has drawn links between increased perpetrator aggression, increased victim resistance, and increased injury (Abbey et al., 2003). These often-inconsistent findings highlight a further need for research into the impact of alcohol on injury.

Although the majority of research has only examined if alcohol consumption prior to the sexual assault was present or not present, it is highly likely that amount of alcohol consumed

prior to a sexual assault could also be linked to increased likelihood of completed rape due to alcohol's impact on motor functioning. It is possible that severe impairment could make women less able to resist the assault, resulting in higher rates of completed rape (Testa & Parks, 1996). If the perpetrator is highly intoxicated, then he may exhibit increased aggression. It has been suggested that alcohol may increase cognitive impairments in both a perpetrator's awareness of how much force he is using while simultaneously increasing his willingness to use violence as a response to potential resistance from the victim (Abbey et al., 2003). Together, these patterns suggest a curvilinear relationship between alcohol consumption and aggression, such that the most perpetrator aggression occurs at low and extremely high levels of both parties' intoxication (Abbey et al., 2003; Abbey et al., 2002). More research is needed to better understand this relationship for both perpetrator and victim at differing levels of intoxication.

Location

A number of researchers have also highlighted the role that setting can play in increasing risk for experiencing an AIA. Alcohol use is likely to occur at settings such as a bar, parties, or on dates (Testa & Parks, 1996). Related to not knowing the perpetrator well, it has been found that bar settings overall are related to increased vulnerability to sexual aggression (Parks & Miller, 1997). Within the college environment, first trying and initiating overall alcohol use in college may further coincide with exposure to perpetrators at party settings. Although few studies have specifically compared location differences between AIAs and non-AIAs, it has been found that a perpetrator's reported alcohol consumption is positively related to the amount of time spent at a party or bar with a victim (Abbey et al., 2003). Additionally, one study conducted by Bedard-Gilligan et al. (2011), directly comparing AIAs with non-AIAs, found that AIAs were more likely to occur in public settings than non-AIAs.

Within AIAs, little is known about how level of intoxication plays a role in the location of a sexual assault. It is possible that level of intoxication may be higher in certain contexts (such as parties and bars); however, more research is needed to determine if alcohol use overall during an assault is linked to particular locations. While more research is needed into what impact these differences have, we know that an AIA is potentially more likely to occur at a location such as a party or bar than at home. Additionally, location could be related to an aspect of sexual assault that has received considerable research attention, assault severity. Intoxication may be a likely strategy used by perpetrators to gain access to a woman, suggesting that perpetrators may target victims at locations where they are most likely to be highly intoxicated and thereby more impaired (Abbey et al., 2003; Testa & Parks, 1996). It is likely events occurring at parties or bars could involve higher amounts of alcohol consumption than on dates between more intimate partners. Further, alcohol impairs a woman's cognitive ability to discern dangerous cues about a sexual assault situation, and it is possible that locations such as parties or bars may be drinking situations in which a woman may be less focused on cues for danger (Abbey et al., 2003; Davis et al., 2009). As alcohol ingestion increases, a woman's vulnerability grows due to impaired capacities to both perceive cues accurately and resist aggressive acts effectively, relating to increased likelihood of experiencing aspects of severity, such as completed rape, during an assault.

Current Study

The complexity of the findings surrounding alcohol use and assault severity highlight the imperative need for further research into how alcohol use at a situational level by both the perpetrator and the victim is linked to aggression, force, injury, and resistance. These findings also substantiate that alcohol's involvement plays a strong role in assault severity. Although

more research is needed, the overall finding emerges that there are stark differences between AIAs and non-AIAs in terms of the severity of the assault. Building on the findings from the first study, the second study examined 1) if specific continuous AUCs related to AIA severity including injury, rape completion, and distress at time of the event and 2) what AUC and assault severity differences emerged during AIAs based on heavy episodic drinking (HED) and location of the event. Based on previous literature implicating the role of alcohol use in assault severity, it was hypothesized that higher reported alcohol use would predict higher rates and degrees of assault severity (H1). Also, analyses were evaluated that compared assault differences based on HED and location of the event. It was further hypothesized that differences would emerge between participants that endorse HED compared to those who do not, such that participants reporting HED would have higher assault severity (H2) and that locations related to parties and events would include higher reported alcohol use (H3) and more assault severity (H4).

Method

Participants

A total of 407 participants were eligible to participate in the study after a screening baseline survey. Eligible participants were: (a) female, b) enrolled in college, and c) were between the ages of 18 and 20, in order to recruit specifically for college women that were under the legal drinking age of 21-years-old in the United States. All participants were informed that the survey would assess questions related to alcohol use and sexual experiences, take approximately 90 minutes to complete, and informed about the sensitive nature of the questions, as well as confidentiality of responses. All participants were provided with resources for the mental health center at their university, the crisis hotline, and various local sexual assault resources at the end of the survey, regardless of their responses. Participants were recruited from

introductory psychology courses for a study about "alcohol use and sexual behaviors", and all participants were provided with course credit for completing the survey. Of the 407 participants, 137 endorsed a history of AIA. Only these participants were included in the analyses.

Participants were 18.82 years old on average (*SD* = 1.86). The majority (66.0%) of participants had been in college for less than a year, were not a member of a sorority (63.6%), spoke English as a first language (63.6%), and reported living on campus (75.4%). The majority of participants were White (41.8%) or Asian American/Pacific Islander (43.3%) and 7.6% were multiracial, 1.5% were Black/African American, 2.9% identified as "Other", 1.5% were Middle Eastern/North African, and 0.7% were American Indian/Alaska Native. Additionally, 6.1% of participants identified as Hispanic/Latina. Forty participants (29.2%) reported a history of sexual assault, and 20 (14.6%) participants reported a childhood history of sexual abuse.

Procedure

The study was advertised through the University mechanism for college research participation, specifying that only female students between the ages of 18-20 years old were eligible to complete the survey. Through this mechanism, students are provided with an electronic list of all active University research. After selecting this survey, prior to receiving the informed consent electronic page, students were asked if they were 1) female and 2) between the ages of 18-20. Once participants confirm their eligibility, they were directed to the link for the study's survey, specifically the electronic informed consent page. The informed consent included detailed information about the sensitive nature of the questions included in the survey, information about the length of the survey (approximately 90 minutes), and information about risks and benefits of participating. As all participants completed the survey at a location of their choosing, the informed consent also suggested that participants' may choose to complete the

survey in a private area, although this was not a specified requirement. The Institutional Review Board, housed within the Human Subjects Division at the location where this research was conducted, approved all aspects of this study. After participants indicated their consent to participate in the study, they were first asked to respond to demographic questions, followed by typical drinking behavior, and last by sexual assault history. Only the participants that endorsed experiencing an alcohol-involved sexual assault were presented with event-level questions about the assault. All other participants responded to questions about their typical alcohol use during sexual behavior. Participants responded to all the measures in the survey in the same sequential order. At the end of the survey, all participants were provided with resources for the mental health center at their university, the crisis hotline, and various local sexual assault resources at the end of the survey, regardless of their responses.

Measures

Sexual Assault History. Using the Sexual Experiences Survey (Koss et al., 2007), participants were asked to indicate if they had had coerced sexual experiences at two time points: 1) After their 14th birthday, but before entering college, and 2) Since entering college. The SES is a behaviorally specific assessment of sexual assault experiences and includes experiences perpetrated by verbal coercion, incapacitation, threats of physical force, and physical force. Sexual assault experiences include sexual contact, attempted penetration, completed penetration, oral sex, and anal sex. Participants were asked to indicate the number of times that a tactic or multiple tactics were used for each of the experiences (0 = *0 times*, 1 = *1 time*, 2 = *2 times*, and 3 = *3 or more times*). Participants were also asked to complete the Childhood Sexual Experiences Measure (Finklehor, 1979). This questionnaire asks participants to report on their history of childhood sexual abuse experiences, ranging from touching to penetration prior to 14-years-old.

Participants were also asked to indicate the number of times each experience occurred. Participants were coded as either having a childhood sexual assault history or not.

Index Assault. Based on the Sexual Experiences Survey, all participants were asked to report on the number of times different experiences (including unwanted contact, attempted vaginal sexual intercourse, completed vaginal sexual intercourse, oral sex, and anal sex) occurred, "When you were incapacitated (for example, by drugs or alcohol), and unable to object or consent". Those who endorsed any of these experiences were presented with the instructions that, "The following questions ask you for information about alcohol use during the most recent event you identified during which you were incapacitated (for example, by drugs or alcohol) and unable to object or consent to sexual behavior". This included participants who endorsed experiencing an assault prior to college and since of the age of 14, as well as those who indicated experiencing an assault since entering college. The following questions asked for information related to both AUCs and severity of this index event.

Alcohol Use Characteristics. AUCs during the index sexual assault were assessed using a variety of questions that have previously been used in our lab as well as a broad array of questions to gather information about alcohol's involvement during the event (George et al., 2014; see Appendix A). Participants were provided with information about standard drink size and asked to report on how many standard drinks they consumed during the event, as well as how many hours they consumed the drinks. They were further asked if they consumed more than four drinks within two hours to assess if HED occurred. Participants were asked to identify their subjective intoxication during the event, based on responses ranging from "sober" to "extremely intoxicated", as well as to indicate if they experienced memory impairment and/or motor impairments during the assault (yes/no). If the participants responded "yes" to either question,

they were asked how severe the memory or motor impairments were, ranging from "mild" to "extreme". In order to calculate BAC, participants were also asked to report their weight and the number of hours during which they consumed the number of drinks they reported. The number of drinks reported and participant weight in pounds were both converted to grams in order to use the equation, "[Alcohol consumed in grams / (Body weight in grams x r)] x 100" to calculate BAC. In this formula, "r" was the gender constant, set at 0.55 for females (Winek, Wahba, & Dowdell, 1996). Participants were also asked about the location of the event including if it happened "at a party", "at a bar", or "at home". Participants were further asked to recall if the perpetrator was drinking (yes/no) and, if so, to estimate how intoxicated the perpetrator was with responses ranging from "sober" to "extremely intoxicated".

Assault Severity. Related to severity of the index event, participants were asked to indicate either "yes" or "no" if penetration occurred during the event. They were further asked to indicate "yes" or "no" if injury occurred, and if they indicated "yes", they were asked a follow-up question, "what was the most severe physical injury you experienced during this event?" Response options included "minor bruises or scrapes", "worse than bruises or scrapes, but did not require medical treatment", "injuries that required medical treatment", and "injuries that required hospitalization" (see Appendix A). Participants were also asked how they labeled the event with response options including "not victimized", "sexual assault", "rape", or "severe miscommunication". To assess self-blame, participants were asked to respond on a Likert-scale ranging from 0-5 about how much they blamed themselves for the experienced based on two items: 1) their behavior during the event (this included examples such as amount of alcohol they were drinking, walking alone at night) and 2) their personality (how trusting they are). Finally,

participants were asked to report on "how distressed they felt immediately following the event" with Likert-scale response options ranging from 0 (no distress) to 3 (extremely distressed).

Data Analytic Plan

Sexual assault severity outcomes were examined through three separate variables including 1) if penetration occurred during the assault, 2) if injury occurred, and 3) level of distress immediately after the assault. The relationship between AUCs (BAC, # of drinks reported, HED, and subjective intoxication) and assault severity were each separately examined. Bivariate correlations between continuous variables and point-biserial correlations between categorical variables were examined in order to determine relationships among the AUC variables and variables related to post-assault severity (see Table 2.2). Logistic regression analysis was used to evaluate the likelihood of penetration, injury, and level of distress. Chi^2 analyses were used to evaluate if there was a significant relationship between HED, as well as subjective level of intoxication, and each of the three severity outcome variables. Penetration, injury, and HED were coded (yes = 1, no = 0), distress immediately following the event was coded (0 = low distress, 1 = high distress) based on a median split, and subjective level of intoxication was coded (sober to mild = 0, moderate = 1, extremely = 2). BAC and number of drinks prior to the assault were mean centered to facilitate interpretation of parameter estimates (Cohen, Cohen, West, & Aiken, 2003). An analysis evaluating the relationship between HED and memory loss (0 = no and 1 = yes, based on median split of the data) was additionally evaluated using chi^2 analyses. Table 2.1 includes descriptive data of all variables. Median split was used for variables, which were non-normal and unable to improve in terms of skewness or kurtosis after undergoing multiple transformation techniques (Manikandan, 2010).

Results

Descriptive Analyses

Overall, 14 participants (10.22%) reported that they experienced physical injury from the event with only 1 participant reporting that she sought medical treatment related to injuries following the event. Sixty-six participants (48.2%) reported experiencing penetration during the event. Additionally, 76.6% of participants reported distress following the event. Related to blame, approximately half of the participants endorsed experiencing some amount of self-blame for the event, and 31 participants (22.6%) specifically indicated that they label this event as a "rape" or "sexual assault". Table 2.1 includes descriptive information of all variables measured. To determine relationship between AUCs and severity, relationship between each AUC (BAC, # of drinks reported, HED, and subjective intoxication) and assault severity was separately examined (see Table 2.2 for all significant correlations). In addition to the current hypotheses of this study, additional aspects of assault severity including self-blame and perpetrator level of intoxication were evaluated. Specifically, bivariate correlations suggest that high levels of perpetrator intoxication were related to significantly lower levels of self-blame, $r = -.20$, $p < .05$. No other significant relationships were determined at this time.

Hypothesis 1: AUCs and Sexual Assault Severity

Results supported all hypotheses related to number of drinks and assault severity (see Table 2.3). The model with a main effect of number of drinks reported on penetration was statistically reliable compared to a constant-only model, $\chi^2(1, N = 111) = 4.18$, $p < .05$, which indicates that number of drinks reported prior to most recent AUC reliably distinguished between participants who experienced penetration during their most recent AIA and those who did not. Classification was acceptable with 60.4% classified correctly. The model with a main effect of number of drinks reported on injury was also statistically reliable compared to a constant-only

model, $\chi^2(1, N = 64) = 8.09$, $p < .01$, which indicates that number of drinks reported prior to most recent AIA reliably distinguished between participants who experienced injury during their most recent AIA and those who did not. Classification was acceptable with 87.5% classified correctly. Finally, the model with a main effect of number of drinks reported was statistically reliable compared to a constant-only model, $\chi^2(1, N = 102) = 4.70$, $p < .05$, which indicates that number of drinks reported prior to most recent AIA reliably distinguished between participants who experienced high distress during their most recent AIA and those who experienced low distress. Classification was acceptable with 70.6% classified correctly. Thus, number of drinks was positively associated with penetration likelihood, injury likelihood, and level of distress.

Results related to BAC and assault outcomes including estimates of model fit are provided in Table 2.3. The model with a main effect of BAC on penetration was statistically reliable compared to a constant-only model, $\chi^2(1, N = 163) = 19.62$, $p < .001$, which indicates that BAC reported prior to most recent AIC reliably distinguished between participants who experienced penetration during their most recent AIA and those who did not. Classification was acceptable with 74.8% classified correctly. Contrary to the hypothesis, there were no significant effects found for BAC and injury, $\chi^2(1, N = 66) = 3.88$, $p = .06$. The model with a main effect of BAC on distress was statistically reliable compared to a constant-only model, $\chi^2(1, N = 115) = 8.48$, $p < .01$, which indicates that BAC reliably distinguished between participants on level of distress. Classification was acceptable with 73.9% classified correctly. Thus, BAC was positively associated with penetration likelihood and level of distress.

Contrary to the hypotheses, there were no significant effects found for subjective level of intoxication and penetration, χ^2 (3, N = 70) = 1.67, p = .64, injury, χ^2 (3, N = 39) = 3.73, p = 0.29 or distress immediately following the event, χ^2 (3, N = 81) = 3.72, p = 0.29.

Hypothesis 2: HED and Assault Severity

Using chi-square test of independence, the relationship between HED and penetration was found to be significant, χ^2 (1, N = 109) = 4.89, p < .05, suggesting that participants who reported HED experienced a significantly higher likelihood of penetration during the most recent assault (see Figure 2.1) than participants who did not engage in HED. Contrary to hypotheses, there were also no significant effects found for HED and injury, χ^2 (1, N = 64) = 1.97, p = .16 or HED and distress immediately following the event, χ^2 (1, N = 110) = 0.33 p = 0.57.

Hypotheses 3 & 4: Differences Based on Location of the Event

Location was dummy coded (1 = bars/clubs, 2 = parties, 3 = at home), and one-way analysis of variance was conducted to determine the main effect of location on number of drinks consumed and BAC. This analysis showed that the effect of location was significant for number of drinks consumed, F(2,102) = 3.56, p = .03. Post hoc analyses using the Scheffé post-hoc criterion for significance indicated that the number of drinks consumed was significantly higher for parties (M = 5.69, SD = 2.62) than home (M = 4.14, SD = 2.35) (see Figure 2.2). The effect of location was also significant for BAC, F(2,102) = 4.05, p = .01. Post hoc analyses using the Scheffé post-hoc criterion for significance indicated that BAC was significantly higher for parties (M = 0.23, SD = 0.12) than for bars/clubs (M = 0.10, SD = 0.11) (see Figure 2.3).

Using chi-square test of independence, the relationship between location and HED was found to be significant, χ^2 (2, N = 101) = 17.48, p < .001, suggesting that parties were related to a significantly higher rate of HED during the most recent assault (see Figure 2.4). The relationship between location and memory was found to be significant, χ^2 (2, N = 96) = 6.19, p < .05, suggesting that parties were related to a significantly higher likelihood of memory loss occurring (present or not) during the most recent assault (see Figure 2.5).

Contrary to the hypotheses, location was not significantly related to penetration, χ^2 (2, N = 95) = 0.82, p = .66, although when comparing differences between parties and home, the results were trending towards significance, χ^2 (1, N = 123) = 2.60, p = .09 (see Figure 2.6). Additionally, location was not found to be significantly related to injury, χ^2 (2, N = 77) = 0.64, p = .73. It should be noted that of the 14 participants who reported injuries, the locations endorsed were parties and either the perpetrator or the participant's home. The relationship between location and distress immediately following the event was found to be significant, χ^2 (2, N = 131) = 10.32, p < .01, suggesting that bars/clubs were related to the lowest rate of distress immediately following the most recent assault (see Figure 2.7).

Discussion

The goal of this study was to investigate AIA experiences among underage college women, specifically how amount of reported alcohol use related to assault severity. In order to capture a broad snapshot of unwanted sexual experiences involving alcohol, women were asked to report on the most recent event, rather than the most severe event they had experienced. The analyses partially supported the first hypothesis by finding that among the AUCs examined, BAC and number of drinks were related to aspects of assault severity, while subjective intoxication was not. The second hypothesis was further partially supported, suggesting that HED was related to increased risk for injury. Further, results found evidence to support the third hypothesis that AIAs occurring at parties would reflect the highest AUCs, while failing to find support for the final hypothesis that AIAs occurring at parties would include the highest level of severity. Overall, the data show that there is a wide range of variation in self-reported experiences of AIAs and that AUCs relate to these experiences. The results from this study confirm previous research suggesting that high levels of intoxication may relate to increased

assault severity (Abbey et al., 2003; Ullman & Brecklin, 2000; Ullman et al., 1999; Giancola & Zeichner, 1995; Koss, 1988), while also extending these findings to include contextual aspects of the assault such as HED and assault location. Additionally, this study is the first of it's kind to specifically evaluate BAC in relation to assault severity variables.

Astoundingly, nearly half of the participants reported that their most recent experience of unwanted sexual contact involved penetration with 69% reporting some amount of distress immediately following the experience. Completed rape is specifically defined as a sexual experience in which penetration occurs without the victim's consent (Kruttschnitt, Kalsbeek & House, 2014). Not surprisingly, penetration is linked to higher distress in the literature, which may support the high rates of distress in this study (Abbey et al., 2003; Ullman & Brecklin, 2000). However, 79.9% of the participants did not label this experience as a sexual assault or rape, and approximately 70% reported experiencing some amount of self-blame for the event. This is in line with previous research suggesting both alcohol may decrease how frequently women acknowledge an experience as a sexual assault, as well as how much she blames herself for the assault (Ullman et al., 2011).

As previously mentioned, the study confirmed that the number of drinks participants reported consuming during the event related to increased risk for experiencing penetration, injury, and reporting a high level of distress following the experience. This corroborates previous literature suggesting that high levels of intoxication may be related to increased risk for penetration (Abbey, Parkhill, & Koss, 2005; Koss, 1982), as well as expands on these findings by also supporting that a higher amount of alcohol may also be linked to higher reported distress about the event. Due to the small number of participants reporting injury during the event, this study was not able to test a potential curvilinear relationship between intoxication and injury that

has been theorized by previous research (Testa & Parks, 1996; Ullman & Brecklin, 2000). This study does, however, suggest that alcohol use was the highest among the small number of participants who were injured during the event. It is important for future research to continue examining this aspect of AIAs in order to further understand what factors relate to injury, including perpetrator BAC.

Contrary to the hypotheses, BAC was only significantly related to increased likelihood of penetration. Additionally, the results found that HED was significantly related to likelihood of penetration and not significantly related to injury or distress. Due to the self-report nature of the BAC calculation (# of drinks, hours, weight) in this study, it is possible that a measure of BAC may experience more inaccuracy in reporting than number of drinks alone. Additionally, it is possible that perhaps the number of drinks a woman had is more clearly linked to distress than her actual BAC or if she engaged in HED. It is possible that the reported "number of drinks" a woman recalls ingesting may be more clearly linked to aspects of an experience such as distress than her actual BAC, particularly when considered in relation to self-blame. For example, if a woman recalls consuming a number of drinks she perceives to be high and if she endorses particular rape myths, she may experience blame for the AIA due to her perceived risky drinking behavior. However, if a woman were to consume five drinks, over the course of six hours, this would result in a substantially lower BAC than a woman who was to consume three drinks within one to two hours. The specific number of drinks may provide different information than BAC. Therefore, it is important for future studies to more clearly evaluate the best measurement of intoxication with AIAs, as well as examine what potential factors could relate to subjective recall. However, importantly, BAC and HED were both related to increased likelihood of penetration occurring. Previous research has also found that sexual assault history along with

high levels of intoxication during an assault may relate to aspects of an assault such as distress and self-blame (Macy, Nurius, & Norris, 2007). It will also be useful for future research to evaluate how assault history impacts the relationship between AUCs and assault severity. Taken together with the results for number of drinks, this suggests that these may be helpful aspects for future research of AIAs to assess, as these findings suggest that if research is to further evaluate the relationship between penetration and intoxication, BAC and HED may be a better measure to use than subjective intoxication.

Interestingly, subjective intoxication was not related to any of the severity variables. While a limitation of this study is its overall subjective, retroactive reporting of intoxication during the event, a simultaneous strength of this design is that it may also capture a woman's reported experience of her overall intoxication during the event. Although it is important to garner accurate intoxication levels during sexual assault events, it is also equally important to gain insight into a woman's reflection on her level of intoxication. Number of drinks may capture sheer volume of alcohol consumed, while subjective level of intoxication may capture aspects such as tolerance or coping strategies related to a woman's processing of an unwanted sexual experience. While the majority of previous studies have asked for participants to report on their subjective level of intoxication, this data suggests that asking for the reported number of drinks consumed may provide more clear information about AIA experiences. It would also be useful for future studies to examine how reported number of drinks compared to subjective reports of intoxication differentially relate to feelings of self-blame, disclosure, or likelihood of seeing treatment of services following an unwanted sexual experience.

This study also sought to examine the role of location in both AUCs and severity. The results consistently showed that alcohol use, including number of drinks, BAC, and HED, was

reported as being the highest at parties. Further, HED as well as memory loss was most likely to occur at parties. It is possible that HED and BAC may have been lowest for bars/clubs due to the participants not being of legal drinking age. Further, the cost of purchasing drinks at bars/clubs may be a built-in disincentive for heavy alcohol consumption compared to parties. This also supports research indicating that the majority of college alcohol use may be occurring at parties (Testa & Parks, 1996). Contrary to the hypotheses, location was not significantly related to injury or likelihood of penetration. Although the results did not reveal significant associations between location and penetration, they were trending towards significance such that parties were slightly more likely to involve penetration than when the event occurred at someone's home. While it is possible that likelihood of penetration occurring is unaffected by location, it may be useful to further examine the interaction between location and level of intoxication on penetration with a larger sample, since this study suggests that level of intoxication may be linked to higher likelihood of penetration.

While the hypothesis that distress would be highest for events occurring at parties was supported in relation to distress reported at bars/clubs, the distress for parties was not significantly different than the distress for events occurring at home. It is possible that distress may be related to different aspects of events occurring at a party vs. at someone's home and that events occurring at home may be qualitatively different in nature and with a perpetrator that is more known to the woman. Interestingly, the results suggested that there was a significant difference between parties/home from AIAs that were reported to occur at bars, indicating a significantly lower reported level of distress for events occurring at bars. This differs from previous research suggesting that bars may be high-risk situations for AIAs (Parks at al., 1999), and may be that lower levels of intoxication at bars could be linked to lower levels of assault

severity and therefore also lower levels of distress. It may be important for future research to examine more aspects of AIA experiences occurring at home compared to parties and bars/clubs because they may have different implications for prevention as well as treatment given their differences in amount of alcohol consumed and distress. Interestingly for prevention programming, given the lower rate of alcohol use at bars/clubs as well as lower severity variables, this may actually be a protective environment for college students related to AIAs. Particularly for underage drinkers, a bar setting that allows for 18-year-old and up students to attend may result in lower overall BACs because they are not permitted to drink. This could serve as a prevention strategy to simultaneously reduce alcohol use among underage drinkers, as well as lower risk for AIA severity. It will be important for future research to examine if this is also the case for women who are age 21 and older.

Limitations

While the results from this study support important findings related to the link between level of intoxication during AIAs and severity of assault experiences, the nature of retrospective self-reporting in this study is a limiting factor, and there is currently no validated measure of AUCs available in the literature that this study could employ. Additionally, all participants reported on an event in which they endorsed "incapacitation", which may have also restricted the range of intoxication in the results to a higher level and limited a wider range of AUCs. These limitations, coupled with the study's cross-sectional design, highlight that it is important that these results be interpreted with caution. This research focused specifically on the most recent event experienced by participants and did not recruit for women who were already heavy drinkers. While this approach provided information around a broad range of underage college women, this also limited the sample size of the study and the ability to ascertain information

from a more targeted group of women. This also limited generalizability to a wider age range of college women. Due to the sample size, there were also a small number of participants who reported experiencing injury during the event. Further, it is possible that there may be other factors impacting assault severity experiences, such as perpetrator level of intoxication. Of note, this study analyzed perceived perpetrator intoxication in relation to severity, finding null results among the bivariate correlations described in the results. It is possible that similar to results found for subjective level of personal intoxication, perceived reports of perpetrator intoxication are not the best assessment of this variable. It is important to examine experiences of women experiencing sexual assault, but the only way to target ending sexual assault is through perpetration. In addition to a lack of focus on perpetrator intoxication, this study only included female participants. Therefore, while the results from this study highlight tentatively important information about how level of alcohol use can increase risk for sexual assault severity, they also underscore a pathway for future research.

Future Directions

Given the aforementioned limitations, it is imperative that future research evaluates AUCs in relation to assault severity among perpetrators, specifically male students (Abbey, 2004). Additionally, future studies focused on collecting a larger sample size would allow for further examination into a potential curvilinear relationship between intoxication and injury or penetration. It is also important for studies to extend these findings to different groups of individuals in order to consider aspects of identity such as ethnicity, gender identity, and sexual orientation. Additionally, there is a need for research to further examine how these results may differ based on sexual assault history, or if there is a difference among participants who engage in frequent HED overall compared to those who do not. Finally, it is imperative that future

studies extend this research by evaluating AIAs and the impact of AUCs longitudinally, as well as validate a measure of AUCs for use in the research. This would allow for a more robust evaluation of the relationship between overall alcohol use and alcohol use at an event-level during sexual assaults and assault severity.

Clinical Implications

This study underscores that it is not alcohol alone that matters during a sexual assault, but also that amount of alcohol can strongly relate to assault experiences. This confirms previous research suggesting that high levels of intoxication can impact assault severity (Abbey et al., 2003; Ullman & Brecklin, 2000; Ullman et al., 1999; Giancola & Zeichner, 1995; Koss, 1988), and extends these findings specifically to aspects of an assault such as BAC and location of the event. It is critical that the field of AIA research continue to "pull back the curtain", so to speak, on alcohol use during sexual assault. Although some previous studies have suggested that high risk environments may relate to risk for sexual assault more than level of intoxication (Parks et al., 1999), this study seems to suggest that there may be a relationship between high risk locations and level of intoxication. These findings highlight the range of experiences women might have during an AIA, as well as emphasize how high level of intoxication could increase negative sexual experiences for college women. Although limiting in terms of generalizing to a wider age range, a unique strength of this study is that results gathered experiences from a broad range of college women under the legal drinking age of 21 in the United States -. This has important implications for prevention programming on college campuses as well as treatment and support for survivors of AIAs. Interestingly, the results did not find a significant relationship between subjective level of intoxication and assault severity, while they did highlight a relationship between reported drink number and assault severity.

Clinically, this suggests that it may be helpful for individuals working to provide services to college women to assess for more than simply subjective reports of intoxication during sexual experiences in order to identify potentially distressing events. It also highlights the potential relationship between tolerance to alcohol and sexual assault. Furthermore, it is possible that subjective reports of perceived intoxication could be a marker for aspects of self-blame. For example, perceiving a lower level of subjective intoxication during an AIA may relate to cognitions such as "I was only mildly intoxicated, I could have done more to stop this from happening". A common script for incapacitated rape is one where a woman unknowingly ingests a chemical substance and loses consciousness prior to the assault. Therefore, within AIAs occurring at high reported BAC levels, lower reports of perceived intoxication may reflect a belief in this script with cognitions such as, "I wasn't asleep or unconscious; therefore, this must just be a misunderstanding". Alternately, there could also be the perception among AIA survivors that they may be to blame for the assault due to their self-determined level of alcohol consumption. More research is needed to examine how level of alcohol use may relate to rape myths as well as rape acknowledgement.

Transitioning from Study 2 to Study 3

As discussed in the previous two studies, there is evidence that alcohol use not only varies during AIAs, but also that higher amounts of alcohol use could be linked to worse assault severity. The logical next step in this project is to move from the level of the event to how these experiences during the event relate to post-assault outcomes. Therefore, Study 3, the concluding study of this project, will shift to focusing on mental health outcomes of assault survivors. This will be done by first comparing participants based on their assault history (AIA, non-AIA, no assault history) on a broad range of mental health outcomes including current alcohol problems, PTSD symptoms, anxiety, and depression. Finally, this study will hone in specifically on post-assault alcohol use outcomes in order to determine if previously demonstrated links between AIA history and alcohol consequences are mediated by assault severity during the event.

Study 3:

Type of Sexual Assault History and Post-Assault Outcomes:

An Examination of Alcohol-Involved Sexual Assaults and

Alcohol Use Characteristics

Abstract

Building on the findings from the previous two studies that evaluated how specific AUCs relate to assault severity outcomes, Study 3 aimed to extend our understanding of AUCs' relationship to sexual assault by focusing on current mental health and alcohol use among college women with a sexual assault history. This study had three aims: 1) to confirm previous finding that women with AIAs report more severe alcohol use outcomes than women with non-AIAs by comparing these groups with each other as well as expanding the current research by also comparing these two groups to women without an assault history on mental health variables, 2) to determine if AUCs relate to alcohol use and mental health outcomes, and 3) to evaluate if these relationships are mediated by assault severity. All results are based on cross-sectional survey data collected from underage women in college. The results supported the hypothesis that participants with any sexual assault history endorsed worse mental health outcomes than participants without any sexual assault history (H1) and that participants with AIAs endorsed worse alcohol use outcomes than both participants with non-AIA histories and no sexual assault histories (H2). Additionally, the hypothesis that AUCs would significantly predict post-assault alcohol consequences was supported (H3), and evidence was found that this relationship among women with AIAs was in fact fully mediated by their reported assault severity during the most recent event (H4).

The Relationship between Type of Assault History and Post-Assault Experiences: An Examination of Alcohol-Involved Assaults and Alcohol Use Characteristics

Research into sexual assault characteristics has found that alcohol-involved assaults (AIAs) and non-AIAs differ in several important ways, including severity of assault (Abbey et al., 2003; Ullman & Brecklin, 2000; Ullman et al., 1999; Giancola & Zeichner, 1995; Koss, 1988). Sexual assault severity, specifically whether penetration and injury occurred, has been consistently linked to worse mental health outcomes for women (Ullman et al., 2007; Resnick et al., 1993; Kilpatrick et al., 1997). Such differences suggest that alcohol's involvement in a sexual assault could be related to differential post-assault recovery. However, to date, there remains limited information available surrounding how AIAs differ from non-AIAs in post-assault outcomes. This is particularly surprising, given the huge amount of research that has been dedicated to sexual assault outcomes in general, regardless of alcohol's involvement (Briere & Jordan, 2004; Chivers-Wilson, 2006; Ellis, 1983; Goodman, Koss, & Russo, 1993; Koss, 1993; Kilpatrick & Acierno, 2003; Rogers & Gruener, 1997) and especially given the fact that several studies highlight potential differences in sexual assault characteristics between AIAs and non-AIAs. The current literature available, albeit limited, will be reviewed to underscore the need for further understanding into mental health outcomes that are unique for survivors of AIAs. First, categorical differences between AIAs and non-AIAs will be addressed, followed by an examination of the differences within AIAs based on level of intoxication.

Alcohol Use

The largest focus on differences between AIAs and non-AIAs has been on alcohol use following a sexual assault. Studies have shown that alcohol use problems are not only highly

prevalent but are also more common following an AIA than following non-AIAs (Abbey et al., 2004; McCauley et al., 2009; McCauley et al., 2010; Testa et al., 2003). Overall, research has consistently found that as many as one-third of all sexual assault survivors, whether an AIA or a non-AIA, develop problematic alcohol use (Kessler et al., 1995). A recent, longitudinal study conducted by Bryan et al. (2016) further verified the link between typical alcohol use and risk for victimization, particularly emphasizing the relationship between previous victimization and overall drinking. Comparing AIAs to non-AIAs, many studies show that alcohol use problems are more common following AIAs (Abbey et al., 2004; Littleton et al., 2009; McCauley et al., 2003; Testa et al., 2003). Specifically, individuals who have experienced an AIA generally report heavier drinking and more alcohol-related consequences than those who experienced a non-AIA (Bedard-Gilligan et al., 2011). Additionally, research has found that survivors of AIAs report a higher likelihood of heavy episodic drinking (HED) in the past year following an AIA compared to survivors of non-AIAs (McCauley et al., 2009).

It has also been shown that survivors of AIAs report heavier drinking both before and following a sexual assault compared to survivors of non-AIAs (Kaysen et al., 2006). This may suggest an overall pattern of heavy alcohol use for survivors of AIAs that may not necessarily be heightened by the assault. It is possible that women with heavy pre-assault alcohol use may be at risk for using drinking as a way to cope. Following a sexual assault, alcohol use patterns for these women may change such that alcohol is being used specifically as a means to cope with the sexual assault (Ullman & Najdowski, 2009). Considerably more information research is needed to determine if the assault specifically accounts for post-assault alcohol use problems and how post-assault alcohol use patterns are different for women who were already heavy drinkers.

Post-Traumatic Stress Disorder

In addition to alcohol use, sexual assault is a leading cause of PTSD among women with 31% of survivors developing clinical level symptoms (Resnick et al., 1993) and rates ranging up to 60% of women developing sub-threshold symptoms (Kilpatrick et al., 1989; Resnick et al., 1993; Foa & Riggs, 1993; Ullman, 2003). However, much less is known about how PTSD outcomes might be uniquely different for survivors of AIAs. This is surprising given that not only may there be a unique role played by alcohol in severity of an AIA, but also because alcohol plays a role in interfering with memory consolidation – a key element in potential for later PTSD symptoms associated with memory of the event (Brewin, Dalgleish, & Joseph, 1996). Currently in the literature, ambiguity remains about whether alcohol use during a sexual assault might increase risk for traumatic symptoms or potentially decrease risk. A study conducted by Zinzow et al. (2010) comparing mental health outcomes of incapacitated rape (IR) survivors with forcible rape (FR) survivors found that experiencing a FR was more strongly associated with PTSD symptoms than surviving an incapacitated rape although both experiences were associated with significantly more PTSD symptoms than participants with no sexual assault history. According to the researchers, one reason for the differences between survivors of FRs compared to IRs is that the survivors of FRs reported more peri-traumatic fear than survivors of incapacitated rapes.

Peri-traumatic fear, or subjective distress involving one's perception of how life threatening the event is, is positively related to later development of PTSD symptoms (Zinzow et al., 2010; Resnick et al., 1993; Kilpatrick et al., 1989). It has been suggested that high to moderate levels of alcohol consumption have an attenuating effect on the stress response (Sayette, 1999), and this may account for lower reported peri-traumatic symptoms among survivors of IRs. This research is further complicated by potential memory loss at high levels of

alcohol use. For both survivors of AIAs and non-AIAs, disruption in memory has been linked to worse PTSD outcomes (Ehlers & Clark, 2000; Halligan, Clark, & Ehlers, 2003). Within sexual assaults specifically involving alcohol use, Zinzow et al. (2010) found support that reporting poor memory of a sexual assault was linked to increased PTSD symptoms for the survivors of IRs. Alcohol has been found to interfere with the encoding of memories, and this process is linearly related to amount of alcohol consumed (White, 2003). Therefore, amount of alcohol, in particular, may play a role in memory disruption during a sexual assault. Similar to researchers' understanding of alcohol's role in severity of the assault, the current state of research highlights an imperative need for increased study not only into how AIAs differ from non-AIAs in PTSD, but also how differing levels of alcohol use may be related to PTSD outcomes.

Anxiety and Depression Outcomes

Alongside alcohol use and PTSD, other mental health symptoms such as anxiety and depression have also emerged as an area of concern for sexual assault survivors (Messman-Moore, Long, & Siegfried, 2000; Pico-Alfonso, 2006). Although limited research has compared AIAs vs. non-AIAs in terms of anxiety and depression outcomes, research has suggested that rape completion as well as experiencing re-victimization are both linked to worse anxiety and depression than for women who experienced attempted rape or for those who do not have multiple victimization histories (Ullman, 2007; Kimerling, Alvarez, Pavao, Kaminski, & Baumrind, 2007). A study conducted by Masters et al. (2013) found that among a group of female drinkers in the community, those with a history of forceful rape reported higher anxiety and depression in the past week compared to women with an alcohol-involved sexual assault history. This corresponds with previous research that has highlighted how severity of assault experiences is linked to worse overall distress following a sexual assault (Classen et al., 2005).

However, little is known about how assault differences are related to anxiety and depression for college women. Given that the large majority of college sexual assaults involve alcohol use and that heavy alcohol use after an AIA is linked to more severe mental health symptoms, greater impairment in functioning, and an overall worse prognosis (Kessler et al., 1995), this study will seek to further elucidate how type of assault history relates to overall mental health, specifically anxiety and depression.

Alcohol Use at an Event-Level and Mental Health Outcomes

While it has become clear that AIAs seem to be linked to higher amounts of alcohol use and more alcohol-related problems, compared to non-AIAs, as well as risk for re-victimization upon closer examination, there remain many questions surrounding this phenomenon (Bryan et al., 2016). The literature reviewed thus far has been prospective in nature, examining how overall alcohol use relates to future risk of experiencing an AIA. Event-level research, however, specifically examines situational aspects of a sexual assault in order to determine if drinking co-occurred with the sexual assault. These type of event-level studies have also supported findings that any alcohol use during an assault is linked to increased assault severity including injury (Ullman, Karabatsos, & Koss, 2000), as well as higher rates of forced sex, more violent behavior, and more injuries to victim than sexual assault not involving alcohol use (Bedard-Gilligan et al., 2011). Currently, we do not have insight into how level of intoxication is related to either injury or rape completion although intoxication generally has been linked to lower victim resistance, as well as to completed rape (Abbey et al., 1996; Harrington & Leitenberg, 1994; Ullman & Knight, 1993). It is possible that level of force used during an AIA by the perpetrator is related to the victim's level of impairment, such that loss of consciousness and extreme motor impairment results in less need for force tactics. This further highlights a need to

understand alcohol use characteristics at an event-level and to understand how dose level relates to assault severity.

What remains unknown is whether women are at greater risk for injury and completed penetration after any amount of alcohol consumption, after drinking to point of intoxication, or only when they drink with a perpetrator who has been drinking. A study conducted by Resnick et al. (2012) found that both engaging in alcohol use during an assault, as well as frequent alcohol use six months prior to the assault, were together linked to a steeper incline in alcohol use at follow-up than women who experienced a non-AIA. This suggests that overall regular heavy alcohol use paired with an AIA may be linked to increased alcohol use outcomes based on an individual's typical alcohol use, rather than in relation to the AIA specifically. However, more information is needed and nothing is currently known about how alcohol use characteristics during the sexual assault relate to post-assault alcohol use problems. Due to the complex nature of alcohol's role in both severity and PTSD, as previously noted, there remains a large need for additional research into how these aspects relate to alcohol problems post-assault as well and how alcohol use after an assault differs for AIAs compared to non-AIAs. Therefore, the overarching aim of this study is to elucidate not only how alcohol use characteristics are uniquely related to mental health outcomes, but also how alcohol use characteristics interact with sexual assault severity in their relationship to alcohol use outcomes.

Current Study

Building on the findings from the previous two studies that evaluated how specific AUCs relate to assault severity outcomes, Study 3 aimed to extend our understanding of AUCs by focusing on current mental health and alcohol use among college women with an assault history. This study had three aims: 1) to confirm a previous finding that women with AIAs report more

severe alcohol use outcomes than women with non-AIAs by comparing these groups with each other as well as expanding the current research by also comparing these two groups to women without an assault history on mental health variables, 2) to determine if AUCs relate to substance use and mental health outcomes, and 3) to evaluate if this relationship is mediated by assault severity. Based on previous research specifically highlighting worse alcohol consequences for women who have experienced AIAs compared to those with a non-AIA history, the third aim of this paper will focus specifically on alcohol consequences as the outcome of interest among women with an AIA history. It was hypothesized that participants with any sexual assault history would have worse mental health outcomes than participants without any sexual assault history (H1) and that participants with AIAs would have worse alcohol use outcomes than both participants with non-AIA histories and no sexual assault histories (H2). It was further hypothesized that AUCs would significantly predict post-assault alcohol consequences (H3), and that this relationship among women with AIAs would be fully mediated by their reported assault severity during the most recent event (H4).

Method

Participants

A total of 407 participants responded to this study's one-time, anonymous survey. Eligible participants were: (a) female, b) enrolled in college, and c) were between the ages of 18 and 20, in order to recruit specifically for college women that were under the legal drinking age of 21-years-old in the United States. Participants were recruited from introductory psychology courses for a study about "alcohol use and sexual behaviors", and all participants were provided with course credit for completing the survey. All participants were informed that the survey would assess questions related to alcohol use and sexual experiences, take approximately 90

minutes to complete, and informed about the sensitive nature of the questions, as well as confidentiality of responses.

Participants were 18.82 years old on average (*SD* = 1.86). The majority (66.0%) had been in college for less than a year, were not members of a sorority (63.6%), spoke English as a first language (63.6%), and reported living on campus (75.4%). The majority were White (41.8%) or Asian American/Pacific Islander (43.3%) and 7.6% were multiracial, 1.5% were Black/African American, 2.9% identified as "Other", 1.5% were Middle Eastern/North African, and 0.7% were American Indian/Alaska Native. Additionally, 6.1% of participants identified as Hispanic/Latina.

Procedure

The study was advertised through the University mechanism for college research participation, specifying that only female students between the ages of 18-20 years old were eligible to complete the survey. Through this mechanism, students are provided with an electronic list of all active University research. After selecting this survey, prior to receiving the informed consent electronic page, students were asked if they were 1) female and 2) between the ages of 18-20. Once participants confirm their eligibility, they were directed to the link for the study's survey, specifically the electronic informed consent page. The informed consent included detailed information about the sensitive nature of the questions included in the survey, information about the length of the survey (approximately 90 minutes), and information about risks and benefits of participating. As all participants completed the survey at a location of their choosing, the informed consent also suggested that participants' may chose to complete the survey in a private area, although this was not a specified requirement. The Institutional Review Board, housed within the Human Subjects Division at the location where this research was conducted, approved all aspects of this study. After participants indicated their consent to

participate in the study, they were first asked to respond to demographic questions, followed by typical drinking behavior, and last by sexual assault history. Only the participants that endorsed experiencing an alcohol-involved sexual assault were presented with event-level questions about the assault. All other participants responded to questions about their typical alcohol use during sexual behavior. Participants responded to all the measures in the survey in the same sequential order. At the end of the survey, all participants were provided with resources for the mental health center at their university, the crisis hotline, and various local sexual assault resources at the end of the survey, regardless of their responses.

Measures

Alcohol-Involved Sexual Assault History. Using the Sexual Experiences Survey (Koss et al., 2007), participants were asked to indicate if they had had coerced sexual experiences at two time points: 1) After their 14th birthday, but before entering college, and 2) Since entering college. The SES is a behaviorally specific assessment of sexual assault experiences and it includes experiences perpetrated by verbal coercion, incapacitation, threats of physical force, and physical force. Sexual assault experiences include sexual contact, attempted penetration, completed penetration, oral sex, and anal sex. Participants were asked to indicate the number of times that a tactic or multiple tactics were used for each of the experiences (0 = *0 times*, 1 = *1 time*, 2 = *2 times*, and 3 = *3 or more times*). Participants were also asked to complete the Childhood Sexual Experiences Measure (Finklehor, 1979). This questionnaire asks participants to report on their history sexual experiences, ranging from touching to penetration prior to 14-years-old. Participants are also asked to indicate the number of times each experience occurred, as well as what their relationship to the perpetrator was from a list of options provided including

stranger, family members, a friend, a person they knew but not a friend, or other. Participants were coded as either having a childhood sexual assault history or not.

Index Assault. Based on the Sexual Experiences Survey, all participants were asked to report on the number of times different experiences (including unwanted contact, attempted vaginal sexual intercourse, completed vaginal sexual intercourse, oral sex, and anal sex) occurred, "When you were incapacitated (for example, by drugs or alcohol), and unable to object or consent". Those who endorsed any of these experiences were presented with the instructions that, "The following questions ask you for information about alcohol use during the most recent event you identified during which you were incapacitated (for example, by drugs or alcohol) and unable to object or consent to sexual behavior". This included participants who endorsed experiencing an assault prior to college and since of the age of 14, as well as those who indicated experiencing an assault since entering college. The following questions asked for information related to both AUCs and severity of this index event.

Alcohol Use Characteristics. AUCs during the index sexual assault were assessed using a variety of questions that have previously been used in our lab as well as a broad array of questions to gather information about alcohol's involvement during the event (George et al., 2014; see Appendix A). Participants were provided with information about standard drink size and asked to report on how many standard drinks they consumed during the event, as well as how many hours they consumed the drinks. They were further asked if they consumed more than four drinks within two hours to assess if HED occurred. Participants were asked to identify their subjective intoxication during the event, based on responses ranging from "sober" to "extremely intoxicated", as well as to indicate if they experienced memory impairment and/or motor impairments during the assault (yes/no). If the participants responded "yes" to either question,

they were asked how severe the memory or motor impairments were, ranging from "mild" to "extreme". In order to calculate BAC, participants were also asked to report their weight and the number of hours during which they consumed the number of drinks they reported. The number of drinks reported and participant weight in pounds were both converted to grams in order to use the equation, "[Alcohol consumed in grams / (Body weight in grams x r)] x 100" to calculate BAC. In this formula, "r" was the gender constant, set at 0.55 for females (Winek, Wahba, & Dowdell, 1996). Participants were also asked about the location of the event including if it happened "at a party", "at a bar", or "at home". Participants were further asked to recall if the perpetrator was drinking (yes/no) and, if so, to estimate how intoxicated the perpetrator was with Likert-scale response options including "sober", "mildly intoxicated", "moderately intoxicated", and "extremely intoxicated".

Assault Severity. Related to severity of the index event, participants were asked to indicate either "yes" or "no" if penetration occurred during the event. They were further asked to indicate "yes" or "no" if injury occurred, and if they indicated "yes", they were asked a follow-up question, "what was the most severe physical injury you experienced during this event?" Response options included "minor bruises or scrapes", "worse than bruises or scrapes, but did not require medical treatment", "injuries that required medical treatment", and "injuries that required hospitalization" (see Appendix A). Participants were also asked how they labeled the event with response options including "not victimized", "sexual assault", "rape", or "severe miscommunication". To assess self-blame, participants were asked to respond on a Likert-scale ranging from 0-5 about how much they blamed themselves for the experienced based on two items: 1) their behavior during the event (this included examples such as amount of alcohol they were drinking, walking alone at night) and 2) their personality (how trusting they are). Finally,

participants were asked to report on "how distressed they felt immediately following the event" with Likert-scale response options ranging from 0 (no distress) to 3 (extremely distressed).

Typical drinking. Overall drinking behavior was assessed using the Daily Drinking Questionnaire (DDQ; Collins et al., 1985). The DDQ provides participants with information about what constitutes a standard drink (including examples such as 12oz of regular beer, 4ox of wine, 1.5oz of 80 proof liquor), and then asks participants to report on their average number of drinks consumed for each day of the week. To calculate drinks per week, a sum score was calculated based on the participants responses. Hours over which alcohol is consumed on typical and peak occasions are assessed for calculation of typical and peak estimated blood alcohol content (BAC). Finally, heavy episodic drinking was assessed with the following question: "Over the past month, how many times have you had 4 or more drinks over a 2-hour period?". A sum score was calculated for number of drinks per week by summing participants' average drinks on each day.

Alcohol-Related Problems. Negative consequences related to alcohol use in the last three months were evaluated using the Rutgers Alcohol Problem Index (RAPI; White & Labouvie, 1989). The RAPI is a 23-item questionnaire that assesses both quantity and severity of health and social consequences related to drinking. Sample items include asking participants to report on how frequently they, "Went to work or school high or drunk" and "Had withdrawal symptoms". Participants were asked to respond using 5-point Likert scales with 0 being never and 5 being 10 or more times in the last three months. Responses were summed to yield a 'past three month consequences' variable. The RAPI showed good inter-item reliability ($\alpha = .87$). This measure was chosen for the outcome in the mediational analysis based on previous research

highlighting differences specifically in alcohol consequences for women who had experienced on AIA (Abbey et al., 2004; Littleton et al., 2009; McCauley et al., 2003; Testa et al., 2003).

Trauma symptoms. Symptoms related to traumatic stress were evaluated using the PTSD Scale-Self Report for DSM-V (PSSR-V; Foa, 2013). This questionnaire asks participants to indicate which types of trauma they have experienced, as well as indicate which trauma currently causes them the most distress. Participants are then asked to report on 20 questions related to symptoms from the diagnostic symptoms clusters, specifically asking participants to reflect on how much each symptom has impacted them in the past month. Participants are then asked to respond to each question about how often they experience the symptoms described using Likert-scales ranging from 0 (not at all) to 4 (6 or more time a week). Sample questions include experiencing "bad dreams or nightmares related to the trauma" and "trying to avoid thoughts and feelings related to the trauma". Participants were also asked to respond to two questions about how much the symptoms "have been bothering them" (distress) and how much the symptoms have been "interfering with their everyday life" (interference). An overall sum score for all the questions was calculated and used for analyses. The PSSR-V showed good inter-item reliability ($\alpha = .93$).

Mental Health. Current mental health symptoms were assessed using the Brief Symptom Inventory (Asner-Self, Schreiber, & Marotta, 2006). This measure was developed from a longer, 90-item measure of mental health symptoms, the SCL-90-R, as a shorter alternative measure of current mental health symptoms (Derogatis, 1977). Research has shown this scale to have high internal and consistent reliability, as well as a strong correlation with the SCL-90-R. The BSI asks participants to respond to 18 questions about their current mental health within the past 7 days, specifically asking participants to report on how much each symptom has bothered or

distressed them. Participants respond to Likert scales ranging from 0 (not at all) to 5 (extremely).Sample questions include “nervousness or shakiness” and “feeling blue”. For the purposes of this study, and based on previous research and suggested scoring (Derogatis, 2001), this study employs an overall score from the BSI, known as a general symptom inventory (GSI), as well as two subscales encompassing questions related to depression and anxiety. All scales showed good inter-item reliability (GSI - $\alpha = .91$; depression - $\alpha = .85$; anxiety - $\alpha = .78$).

Data Analysis

One-way ANOVA was used to assess differences between groups for all outcomes (see Table 3.2 for bivariate correlations). Among participants reporting a history of experiencing AIAs, linear regression modeling was used to evaluate the interaction between alcohol use during AIAs and assault severity. Specifically, an interaction term was created between AUCs and assault severity, and entered into the model along with the alcohol use and severity variables, with mental health outcomes as the dependent outcome. A Sobel test was used to evaluate if assault severity mediated the relationship between AUCs and post-assault RAPI scores.

Results

Descriptive Information

Related to sexual assault history (SAH), 251 (61.4%) participants reported no adult SAH, 40 participants (9.8%) endorsed a history of non-alcohol involved assault only (non-AIA), and 118 participants (28.8%) endorsed a history of AIA. Among the AIA group 48 (11.7% of total sample, 40.7% of AIAs) endorsed a history of both non-AIA and AIA. Sixty-four (15.6%) participants endorsed a history of childhood sexual abuse (CSA). Please see Table 3.1 for a comparison of descriptive information for all variables across participants with AIAs compared to participants with non-alcohol SAHs, and participants with no SAHs.

SAH Differences in Current Alcohol Use and Mental Health

Alcohol Use

The analysis showed that the effect of SAH was significant for average number of drinks consumed per week, $F(2, 402) = 29.41$, $p < .001$. Post hoc analyses using the Scheffé post-hoc criterion for significance indicated that the number of drinks consumed was significantly higher for the AIA group than both groups with no significant differences between the no-SAH or non-AIA groups (see Figure 3.1). There was also a significant effect of SAH on RAPI scores, $F(2,375) = 33.03$, $p < .001$. Post hoc analyses using the Scheffé post-hoc criterion for significance indicated that RAPI scores were significantly higher for the AIA group than both other groups with no significant differences between the no-SAH or non-AIA groups (see Figure 3.2).

Mental Health

Analyses further showed that the effect of SAH was significant for PTSD scores, $F(2,408) = 13.31$, $p < .001$, with post hoc analyses using the Scheffé post-hoc criterion for significance indicating that PTSD scores were significantly lower for the no-SAH group than for either SAH positive group with no significant differences in PTSD scores between the AIA and the non-AIA group (see Figure 3.3). There were no significant differences between groups based on BSI general scores, $F(2,408) = 0.70$, $p = .50$, depression scores, $F(2,403) = 1.34$, $p = .26$, or anxiety scores, $F(2,402) = 0.62$, $p = .62$. However, when evaluating the group of participants that reported both AIAs and non-AIAs separately, there were significant differences in anxiety, $F(2,102) = 3.56$, $p = .03$, with post hoc analyses using the Scheffé post-hoc criterion for significance indicating that anxiety scores were highest for the group with non-AIAs and the group with the combined history ($M = 5.69$, $SD = 2.62$) (see Figure 3.4).

AUCs and Post-Assault Mental Health Outcomes

Post-sexual assault mental health outcome variables included RAPI scores, PTSD scores, and BSI scores (see Table 3.3 for all significant bivariate correlations). Hierarchical regression analysis was used evaluate mental health outcomes, including RAPI scores, BSI scores, and PTSD scores as a function of alcohol use reported prior to the event and rape severity variables (penetration and injury).

BAC During Event

BAC during the event was significantly related to all alcohol use and mental health outcome variables except for BSI general scores (see Table 3.4). Additionally, assault severity was significantly related to all alcohol use and mental health outcome variables (see Table 3.4). Based on the findings that among AIAs, alcohol problems were specifically higher than among other SAH groups, a mediational analysis was conducted to determine the relationship between BAC during the event and severity on current alcohol problems.

Alcohol Problems

As reported in Study 1, logistic regression analyses confirmed that BAC during the event significantly differentiated groups based on assault severity, $\chi^2(1, N = 161) = 19.62$, $p < .001$. In this analysis, assault severity was evaluated as the mediator between BAC during the event and RAPI scores (see Figure 3.5). For step 1 of the mediation model, BAC during the most recent AIA, controlling for average drinks per week, was regressed onto RAPI scores. This step was significant, $F(3,60) = 6.04$, $p < .001$. In the second step, AIA severity was included as a predictor of RAPI scores, and this step was also significant, $F(4,60) = 6.69$, $p < .01$. The R^2 change in the second step was significant, $F_{change}(1,56) = 4.93$, $p = .03$. Assault severity's relationship with RAPI scores remained significant during the most recent event, $\beta = 0.27$, $t(160) = 2.22$, $p =$

.03. Most importantly, the relationship between BAC during the most recent event and assault severity was weaker in this analysis and no longer significant, Beta = 0.15; $t = 1.56$, $p = .12$, compared to the direct relationship $\beta = 0.27$, $t(160) = 2.24$, $p = .03$. These results suggest full mediation (see Figure 3.5). A Sobel test was conducted to confirm mediation, which found a significant mediation effect of assault severity on the relationship between BAC during the event and current RAPI scores in the model, $z = 2.41$, $p < .01$. Severity mediated 32.89% of the effect on post-assault RAPI scores (see Figure 3.5).

Discussion

The primary goal of this study was to examine alcohol use and mental health outcomes among women who had experienced an AIA. This was accomplished by evaluating the data from two separate perspectives. First, the current mental health of women who had experienced an AIA was compared to women who had a non-AIA history and women with no SAH. Second, women with AIAs only were evaluated alone in order to determine what aspects of an AIA, including amount of alcohol consumed during the AIA and assault severity, uniquely relate to post-assault alcohol problems. Therefore, results from each aspect of this study will first be discussed individually, followed by an integrative discussion of how these findings inform our current understanding of AIAs and post-assault outcomes.

Type of Assault History and Mental Health Outcomes

This first aim of this study was to confirm previous research suggesting that while post-assault outcomes related to PTSD, anxiety, and depression may be worse for non-AIAs, substance use outcomes seem to be more pronounced for women who have experienced an AIA. The results confirmed the hypothesis that substance use outcomes, both average drinks per week and alcohol consequences, were significantly worse for the AIA group than for both women with

no SAH and women who had experienced a non-AIA. Additionally, results supported the hypothesis that PTSD was worse for both assault groups than for the group with no SAH, reflecting that PTSD symptoms were the most elevated among the non-AIA assault group. Both these findings corroborate previous research indicating different negative outcomes based on assault type (Zinzow et al., 2010; Resnick et al., 1993; Kilpatrick et al., 1989). Interestingly, no differences were found between groups on overall mental health scores or on the depression and anxiety subscales. However, when the AIA group was separated into women who only experienced one time of sexual assault, compared to women with multiple types of victimization history, the group of women who had experienced re-victimization was significantly higher than all other groups on their reported anxiety symptoms. Previous literature has suggested that having a multiple victimization history may be linked to the most severe mental health for assault survivors (Classen, Palesh, & Aggarwal, 2005; Gidycz et al., 1993, 1995), and these findings may reflect the role of re-victimization on mental health. Further research is needed to understand more completely how assault history uniquely is related to currently mental health and substance use.

AIAs and Assault Characteristics

When evaluating differences among women with an AIA history, results confirmed the hypothesis that both BAC and assault severity were related to all outcomes evaluated including PTSD scores, anxiety/depression scores, and severity of reported drinking problems. Considering assault severity, this confirms previous research suggesting that likelihood of penetration as well as injury is linked to post-assault outcomes. However, limited research has specifically evaluated this relationship among AIAs only (Ullman et al., 2007; Resnick et al., 1993; Kilpatrick et al., 1997). Therefore, these results confirm research on severity within sexual assault more generally.

When considering BAC, this is an understudied and substantial knowledge gap within the current research. Specifically, although not related to the overall mental health score, results found that higher BAC was significantly related to higher post-assault PTSD scores, alcohol problems, anxiety, and depression. This is fascinating in light of previous research that has suggested AIAs may be linked to lower PTSD scores, as well as the findings from the first phase of the study supporting this previous research. Given the limitations of the current study, including that it was cross-sectional in nature as well as lacking a direct link between PTSD symptoms and the assault indicated by participants, it is important to interpret these findings with caution. However, these findings suggest that previous research evaluating alcohol's role in a sexual assault dichotomously, as either present or not, may be missing valuable information about post-assault coping and recovery. This suggests that it is not alcohol alone that impacts assault experiences and recovery, but perhaps the amount of alcohol consumed during the event.

To further investigate relationships among BAC, assault severity, and post-assault outcomes, the study lastly sought to evaluate a mediational model. Due to the current literature on AIAs and post-assault alcohol consequences, this phase of the study narrowed its focus to specifically examine drinking consequences among women who had experienced an AIA. As mentioned previously in the introduction, this study chose to focus on alcohol consequences, and therefore the RAPI score was chosen as the outcome for the mediation analysis. Subsequently, the results supported the hypothesis that assault severity fully mediated the relationship between BAC and alcohol problems. This suggests that while higher BAC is related to worse post-assault alcohol problems, it is specifically the relationship between BAC and assault severity that accounts for this relationship. While previous research has suggested that perhaps women who have experienced an AIA report higher post-assault drinking problems than women who have

experienced a non-AIA because they are more likely to be heavy drinkers, these results suggest that there is more to this relationship than simply typical drinking habits. The findings from this study highlight how higher BACs may be linked to more severe assault experiences and further indicate that it is assault severity that may play the largest role in post-assault alcohol consequences. While this is consistent with previous research implicating assault severity in worse outcomes (Abbey et al., 2003; Ullman & Brecklin, 2000), this has never been evaluated among women with AIAs only or with consideration given to level of intoxication during the assault.

Limitations

An overarching limitation of this study is that it is cross-sectional in design, and therefore it is impossible to determine the temporal relationship between symptoms measured and sexual assault history. This is a limiting factor for all analyses. Specifically within the mediational analyses, although participants are reporting on alcohol use during a previous event and RAPI scores for past one months, it is challenging to determine the direction of the relationships since RAPI scores may have been the same prior to the index event depending on how recently it occurred (for example, if AIA occurred within past month). Although typical drinking was controlled for, this study cannot verify if current alcohol problems were different prior to the AIA event. In this study, all participants reported on an event in which they endorsed "incapacitation", which may have also restricted the range of intoxication in the results to a higher level and limited a wider range of AUCs. Additionally, this study did not specifically ask participants to link their current symptoms to any particular event. Related to PTSD outcomes in particular, it is impossible to know if the symptoms captured were due to the participants' assault history, or to a different traumatic experience. Further, there may be other variables impacting

the participants substance use, such as drinking motives, alcohol related expectancies, or family history of alcohol use disorder. Taken together, these limitations highlight that it is important to interpret these results with caution. They also highlight the need for further research into the intersection between sexual assault history, assault experiences, and post-assault outcomes.

Future Directions

This study provides a preliminary basis for a much-needed body of research into what mechanisms impact post-assault mental health and substance use outcomes among women with a sexual assault history. It is imperative that future research further explores the findings supported by the results of this study. It will be important for these studies to include longitudinal design, as well as to specifically ask participants to explicitly report on PTSD related to the index trauma involving alcohol use. Additionally, it would be useful for future research to evaluate additional risk factors such as drinking motives and sex-related alcohol expectancies in order to further explore the relationship between sexual assault and post-assault alcohol use. Further, there are many additional aspects of AUCs that could be linked to post-assault outcomes that are important for informing prevention efforts. These include aspects of self-blame, rape acknowledgement, as well as disclosure following an event. It is possible that, particularly given the findings of Study 1, that there may be an interaction between perceived perpetrator intoxication and participants' intoxication that could also impact how women who experience AIAs come to understand and respond to an unwanted sexual experience. It has been suggested in the research that alcohol may be used as "self-medication" (Ullman et al., 2005), and that individuals may ingest alcohol post-assault to cope with and potentially avoid traumatic symptoms (Ullman & Najdowski, 2009). It is possible that many of these findings reflect overall differences in alcohol use, and there is a need for increased insight into the drinking to cope

hypothesis. More research is needed in order to determine the complex relationships among alcohol use, sexual assault, and post-assault outcomes.

Clinical Implications

It has been suggested by previous research that perhaps women with an AIA history experience worse post-assault substance use outcomes than women with a non-AIA history because they are heavy drinkers overall prior to the event (Kaysen et al., 2006). This study, however, suggests that there may be a complex interaction between alcohol use and assault experiences leading to increased risk for post-assault alcohol use consequences. Specifically, this study emphasized the mediational effects of assault severity on the relationship between alcohol use and post-assault outcomes. Although it may seem that heavier drinking during a sexual assault is a proxy for overall heavy drinking, these results tentatively suggest that it is actually the level of severity during the event that translates alcohol use during the event into post-assault alcohol consequences. Specifically, heavier alcohol use during an AIA places women at increased risk for more severe assault experiences, which in turn increases risk for post-assault substance use. Clinically, this provides more understanding into the pathway of risk for post-assault outcomes among women who are heavy drinkers pre-assault.

Overarching Conclusions

Overarching Conclusions

As the literature currently stands, there is little to no research available about level of intoxication or other alcohol use characteristics during sexual assaults. It is paradoxical that at the very same temporal juncture that the White House and other societal leadership institutions such as the military are highlighting the high prevalence of women's sexual victimization and its significant mental health tolls, the scientific literature offers remarkably scant information and insight about the most common type of assault: alcohol-involved rape. Previous research, having relied on primarily dichotomous indicators of alcohol involvement, has provided only rudimentary descriptive information. This study's overarching goal was to provide insight into what how exactly alcohol use varies during sexual assaults and what impact this has on both assault experiences and post-assault substance use outcomes. The results from Study 1, Study 2, and Study 3 coalesce to provide support that amount of alcohol use during a sexual assault matters in terms of assault severity and post-assault experiences.

Study 1 illuminated the variations of AUCs during sexual assault, while also highlighting different patterns of AIAs that emerged from the data. The results from this study confirm previous research that having a sexual assault history can lead to further re-victimization (Classen, Palesh, & Aggarwal, 2005; Gidycz et al., 1993, 1995), while also extending this research to suggest potential contextual risk factors such as location and perpetrator drinking that might impact AIA experiences among college women with a sexual assault history. Study 2 probed further into AUCs by examining their impact on sexual assault severity – specifically suggesting that a high number of drinks consumed are linked to a higher likelihood of penetration during an assault. This study also provided guidance for future research measurement, highlighting how number of drinks may be a better index for evaluating sexual

assault experiences than descriptive ratings of subjective intoxication. Finally, Study 3 confirmed previous research that college women with an AIA history experience worse alcohol problems than women with a non-AIA or no SAH, while also providing a crucial new element to the literature on post-assault outcomes. Specifically, results from this study suggest that it might be severity of assault experiences that mediates this link between alcohol use during an AIA and post-assault alcohol consequences. Taken together, these results provide important insight into not only how alcohol use varies during AIAs, but also how amount of alcohol use relates to severity and in turn post-assault substance use.

The implications of these studies range from improving our overall assessment of AIAs to shaping and informing public policy, forensics, as well as prevention and intervention of AIAs. In terms of assessment and forensics, this information is imperative for both clarifying our understanding of alcohol's role in sexual assault for assessment purposes, as well as understanding the impact of sexual assault situations involving alcohol on survivors. Understanding alcohol use characteristics during sexual assault could also play a role in educating students further about AIAs. Considering that many students do not report sexual assault, this could also help inform prevention programming in higher education by giving colleges information on specifics about alcohol use risk factors related to sexual assault to disseminate to students – both concerning their risk for AIAs and also how responses to a survivor of AIAs or feelings of self-blame could play a role in recovery. In terms of public policy, research into this area could suggest what funding is needed for prevention, intervention, and ultimately further research.

Future Directions

The current project provides a guide for next steps in understanding alcohol's role in sexual assault. First, future research needs to develop and validate a reliable measure of AUCs in order to more consistently and frequently evaluate this phenomenon in the AIA research. Second, future research needs to address the limitations of this study by evaluating the impact of AIAs longitudinally and with improved measurement. One of the most limiting factors of this study is its cross-sectional design. For this reason, it is impossible to determine the exact temporal and directional relationships between sexual assault experiences and post-assault outcomes. It is important for future research to evaluate AIAs longitudinally and potentially using such methodologies as timeline follow back data (Sobell & Sobell, 1996) to more accurately collect alcohol use information. Additionally, while there is value to evaluating the most recent experience of an AIA, it would also be useful for future research to evaluate aspects of alcohol use based on the most severe event of a sexual assault experienced by participants. Further, it would be useful for future research to compare AUCs during AIAs to AUCs during consensual sexual experiences, both within participants who have experienced AIAs as well as between participants who do not have a sexual assault history. In order to clearly and most accurately gather an understanding of AUCs, these next steps would be useful for future research.

Next, future research needs to extend these findings to both at-risk groups as well as to determine what potential cultural differences exist in AUCs. This study merely scratches the surface in terms of illuminating alcohol's role in sexual assault for women. Specifically, this research needs to extend to work with perpetrators. This study only honed in on the experiences of women, and while it is important to understand these experiences, it is only through work with perpetrators that violence against women can truly be addressed. The ultimate goal of First

Report of the White House Task Force to Protect Students From Sexual Assault (2014) is to target sexual assault perpetration. Although it is important to understand the role of AUCs among women experiencing AIAs, the only way to stop sexual assault is by dedicating more research and intervention efforts towards perpetrators. A logical next step towards furthering our understanding of AIAs would be to gather more information about self-reported substance use from male college students. This could also help inform our understanding of how students perceive sexual experiences overall in the context of alcohol use in order to begin addressing overall attitudes towards sex and consent on college campuses. Finally, due to the high rate of sexual assault on college campuses, it would also be helpful to further evaluate how this information could translate into prevention programming for college students. It could be useful for future studies to evaluate the role of rape acknowledgement and self-blame related to AUCs.

It is likely that these results capture a snapshot of women's attempts to both understand as well as to cope with the ambiguity surrounding alcohol and sexual experiences. It is important for future research to take a closer look at both alcohol, as well as the cultural environment surrounding alcohol and sex in order to begin to unpack this all too common experience for young women. The primary message of the three studies described within this project is that level of alcohol use matters during a sexual assault. However, the findings from these results are merely the beginning of a long journey ahead towards grasping what exact role alcohol has on the numerous aspects of sexual assault experiences.

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Summary of Tables

Table 1.1. AUC Descriptive Information

AUC Variable	*n*	%
Total	137	33.5
HED		
No	32	23.4
Yes	105	76.6
Memory Loss		
No	77	56.2
Yes	60	43.8
Mild	40	32.5
Moderate	28	22.8
Severe	4	3.3
Motor Impairment		
No	62	45.3
Yes	75	54.8
Mild	41	40.2
Moderate	21	20.6
Severe	2	2.0
Location		
Bar/Club	8	6.1
Party	33	25.2
Greek Event	42	32.1
Home	23	17.6
Perpetrator's Home	16	12.2
Outside	9	6.9
Subjective Level of Intoxication		
Sober	24	18.6
Mildly Intoxicated	30	23.2
Moderately Intoxicated	54	41.9
Extremely Intoxicated	21	16.3
Perceived Perpetrator Intoxication		
Sober	17	12.4
Mildly Intoxicated	23	16.8
Moderately Intoxicated	32	23.4
Extremely Intoxicated	65	47.5

Table 1.2. Fit statistics for the latent class analyses.

	AIC	BIC	LMR	Entropy
2 Classes	1655.49	1741.58	-869.06**	0.60
3 Classes	1649.85	1780.86	-804.75*	0.70
4 Classes	1662.24	1838.09	-789.94	0.67

*p < .01, **p < .001

Table 2.1. Assault Severity Descriptive Information

Severity Variable	*n*	%
Total	137	33.5
Penetration		
No	123	89.8
Yes	15	10.2
Post-Assault Distress		
None	47	31.0
Mild	58	38.2
Moderate	22	14.5
Severe	25	16.4
Blame		
Behavior		
Not at all	84	56.8
Somewhat	33	22.3
Mostly	18	12.2
Completely	13	8.9
Personality		
Not at all	72	48.3
Somewhat	37	24.8
Mostly	27	18.1
Completely	13	8.8
Label		
Not Victimized	60	39.0
Severe Miscommunication	63	40.9
Sexual Assault/Rape	31	20.1

Table 2.2. Bivariate correlations

	1.	2.	3.	4.	5.	6	7.	8.	9.	10.
1. # of Drinks	1.00	**.087****	**0.37****	**0.52****	**0.43****	**0.44****	**0.29****	**0.35****	0.17	**0.22***
2. BAC		1.00	**0.32****	0.31	**0.25***	0.03	**0.23***	0.24	0.17	**0.26****
3. Motor			1.00	**0.72****	0.16	0.10	0.13	0.24	0.03	0.04
4. Memory				1.00	**0.40***	**0.37***	0.25	0.45	0.18	0.02
5. Subj Intox					1.00	**0.29***	**0.28***	0.30	-0.13	0.21
6. HED						1.00	**0.21***	0.18	**0.21***	0.06
7. Perp Intox							1.00	-0.20	0.03	-0.13
8. Injury								1.00	0.20	0.10
9. Penetration									1.00	**0.28****
10. Distress										1.00

Note. $n = 137$ *p < .05, **p < .01

Table 2.3

Summary of Logistic Regression Analysis

Outcome	Predictor	*B*	*SE*	Wald statistic	*OR*	95% CI
Penetration						
	Drink #	0.16	0.08	4.03*	1.17	[1.00, 1.36]
	BAC	4.09	1.94	4.47*	5.99	[1.35, 266.08]
Injury						
	Drink #	0.46	0.18	6.27**	1.58	[1.10, 2.26]
	BAC	6.60	3.59	3.39	7.36	[0.65, 8.31]
Distress						
	Drink #	0.18	0.09	4.49*	1.20	[1.01, 1.43]
	BAC	5.24	1.97	7.10**	188.29	[4.00, 886.01]

Note. $n = 137$. Participants with missing data on certain variables were excluded due to listwise deletion. *$p < .05$, **p<.01. OR = odds ratio; CI = confidence interval.

Table 3.1. Means and Standard Deviations Based on Assault Type

	No SAH	Non-AIA	AIA
Drinks per Week	3.82 (5.36)	2.08 (3.59)	7.27 (9.25)
RAPI	21.76 (5.53)	21.21 (6.37)	29.73 (10.64)
PTSD	6.92 (10.90)	12.75 (12.74)	11.08 (10.73)
BSI - General	21.63 (7.90)	24.75 (9.49)	22.04 (8.56)
BSI - Anxiety	4.41 (2.24)	4.38 (2.37)	4.85 (2.04)
BSI - Depression	5.91 (2.87)	7.33 (4.46)	6.89 (3.07)

Table 3.2. Bivariate correlations

	1.	2.	3.	4.	5.
1. Typical Drinking	1.00	**0.61****	0.09	0.02	0.01
2. RAPI		1.00	**0.20****	**0.18****	**0.17****
3. BSI - Anx			1.00	**0.67****	**0.23****
4. BSI - Dep				1.00	**0.22****
5. PTSD					1.00

Note. $n = 409$. **p < .01

Table 3.3. Bivariate correlations for AUCs among with an AIA history

	1.	2.	3.	4.	5.	6	7.	8.	9.	10.
1. # of Drinks	1.00	**.087****	**0.37****	**0.52****	**0.43****	**0.47****	**0.30****	-0.00	-0.07	0.07
2. BAC		1.00	**0.32****	**0.31**	**0.25***	0.04	**0.44****	**0.16***	**0.17***	**0.19***
3. Motor			1.00	**0.70****	0.16	0.11	0.03	0.11	0.04	**0.21***
4. Memory				1.00	**0.40***	**0.37***	0.23	-0.04	0.01	-0.06
5. Subj Intox					1.00	**0.29***	0.01	0.05	0.06	-0.03
6. HED						1.00	-0.04	-0.07	-0.12	-0.07
7. RAPI							1.00	**0.20****	**0.18****	**0.17****
8. BSI - Anx								1.00	**0.67****	**0.23****
9. BSI - Dep									1.00	**0.22****
10. PTSD										1.00

Note. $n = 137$ *p < .05, **p < .01

Table 3.4. Predicting alcohol Use and Mental Health Outcomes

	BAC During Event					Assault Severity				
	b	*SE*	*B*	*t*	*p*	*b*	*SE*	*B*	*t*	*p*
RAPI	36.37	6.14	0.44	5.93	0.00	7.02	1.44	0.40	4.88	0.00
PTSD	30.04	7.63	0.39	3.94	0.00	5.05	2.12	0.27	2.38	0.02
BSI - General	5.72	5.33	0.09	1.07	0.29	2.82	1.38	0.17	2.05	0.04
BSI - Anxiety	2.67	1.31	0.16	2.04	0.04	0.57	0.28	0.18	2.08	0.04
BSI - Depression	3.83	1.82	0.17	2.10	0.04	1.07	0.50	0.18	2.12	0.04

Summary of Figures

Figure 1.1.

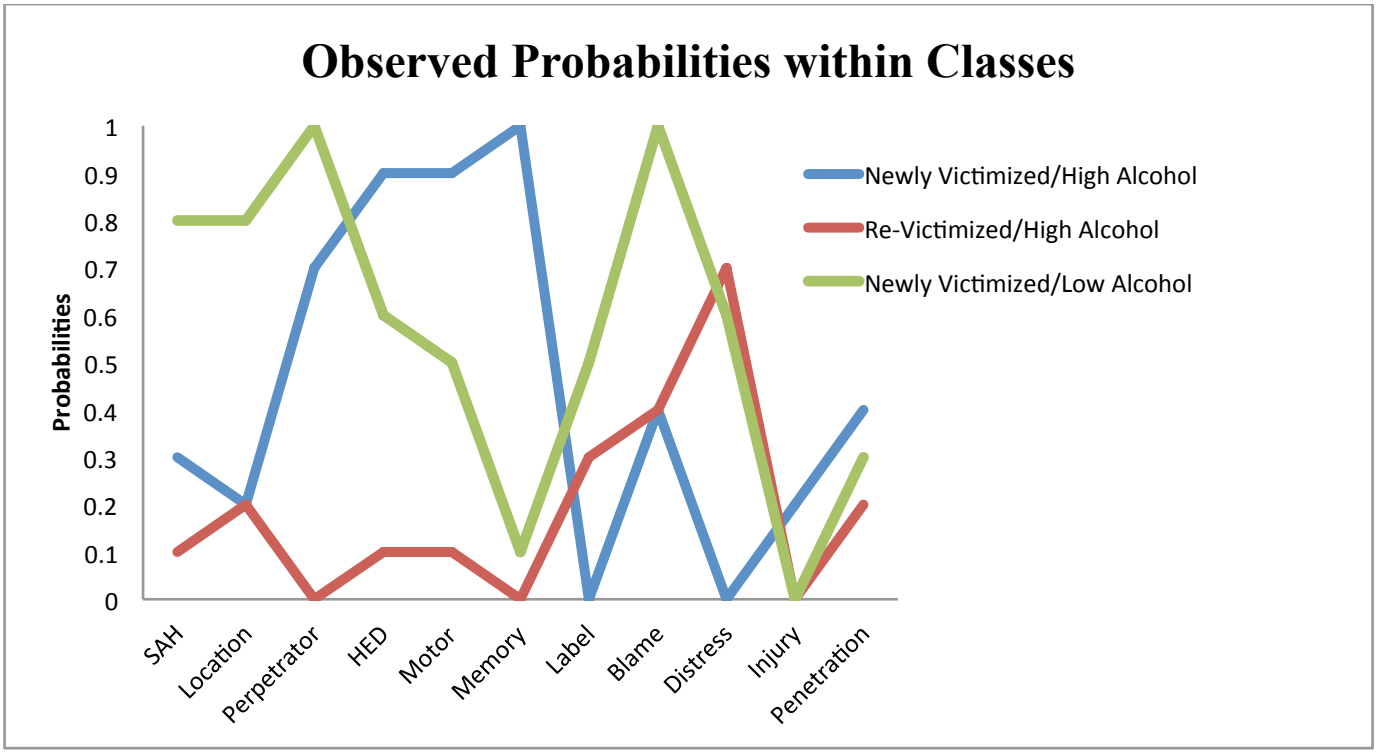

Observed Probabilities within Classes
Probabilities
1
0.9
0.8
0.7
0.6
0.5
0.4
0.3
0.2
0.1
0
SAH
Location
Perpetrator
HED
Motor
Memory
Label
Blame
Distress
Injury
Penetration
Newly Victimized/High Alcohol
Re-Victimized/High Alcohol
Newly Victimized/Low Alcohol

Figure 2.1.

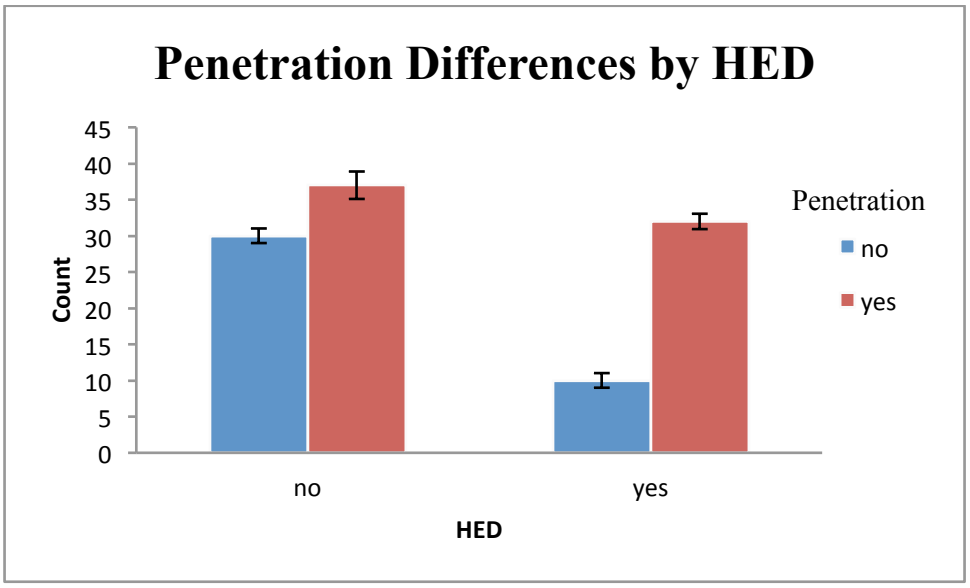

Penetration Differences by HED
45
40
35
30
25
20
15
10
5
0
Count
no
yes
HED
Penetration
no
yes

Figure 2.2.

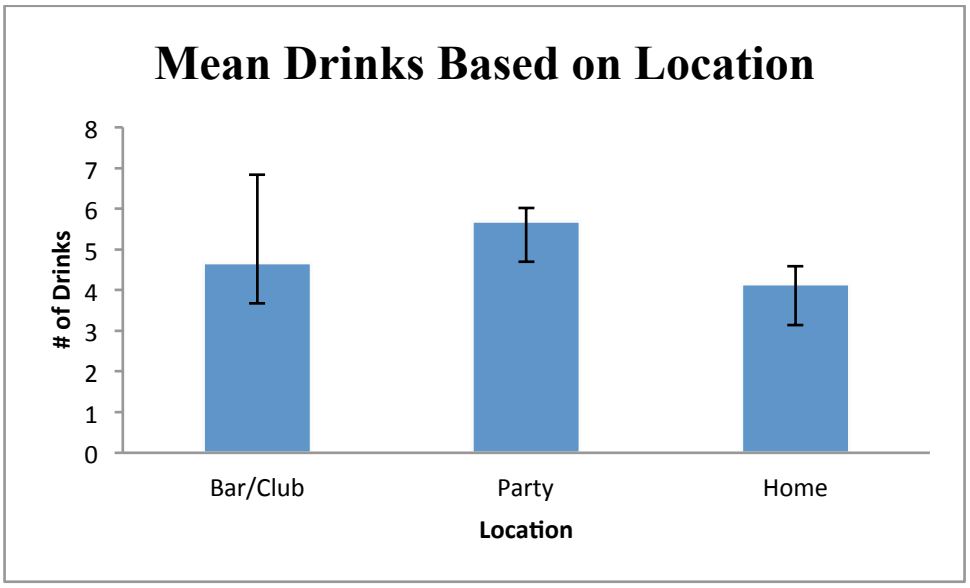

Mean Drinks Based on Location
# of Drinks
8
7
6
5
4
3
2
1
0
Bar/Club
Party
Home
Location

Figure 2.3.

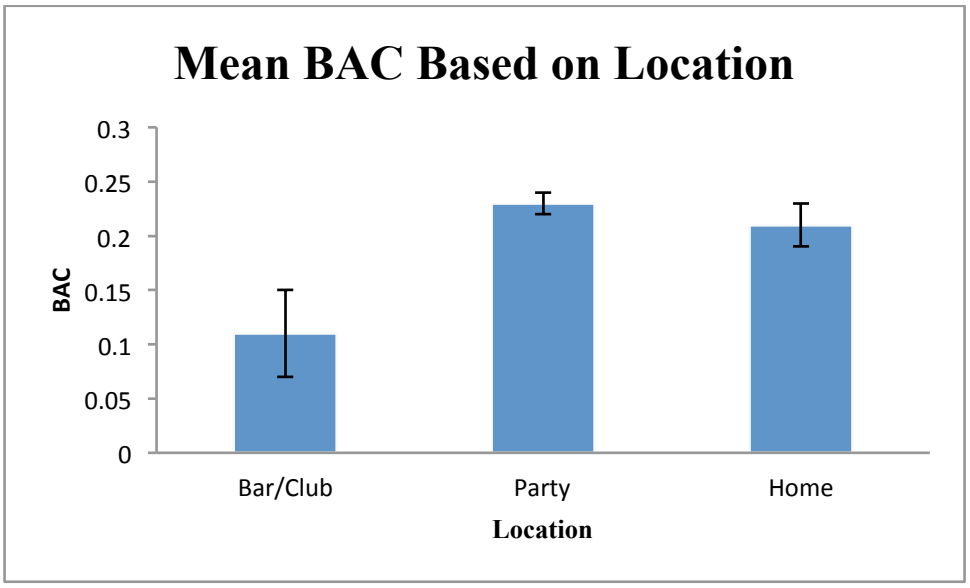

Mean BAC Based on Location
0.3
0.25
0.2
0.15
0.1
0.05
0
BAC
Bar/Club
Party
Home
Location

Figure 2.4.

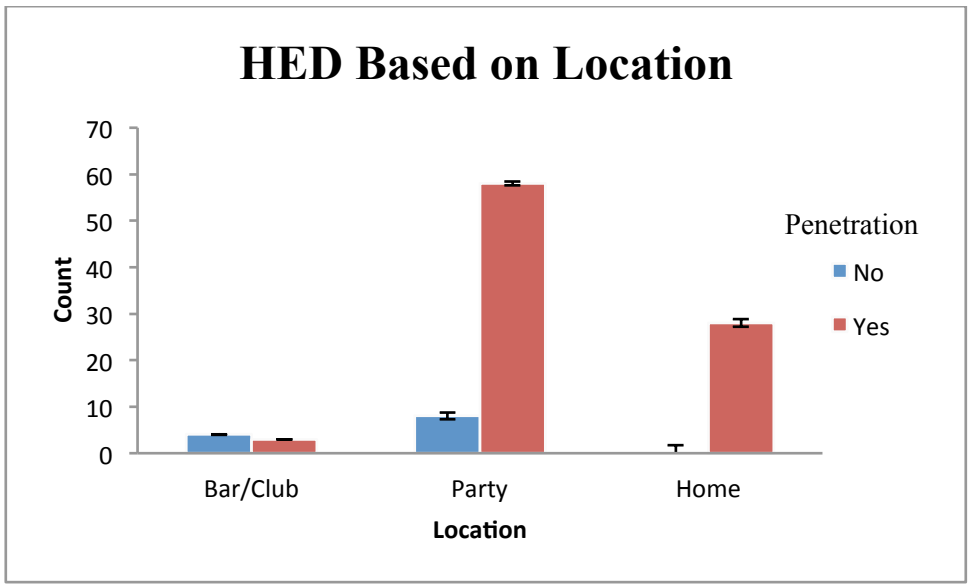

HED Based on Location
70
60
50
40
30
20
10
0
Count
Bar/Club
Party
Home
Location
Penetration
No
Yes

Figure 2.5.

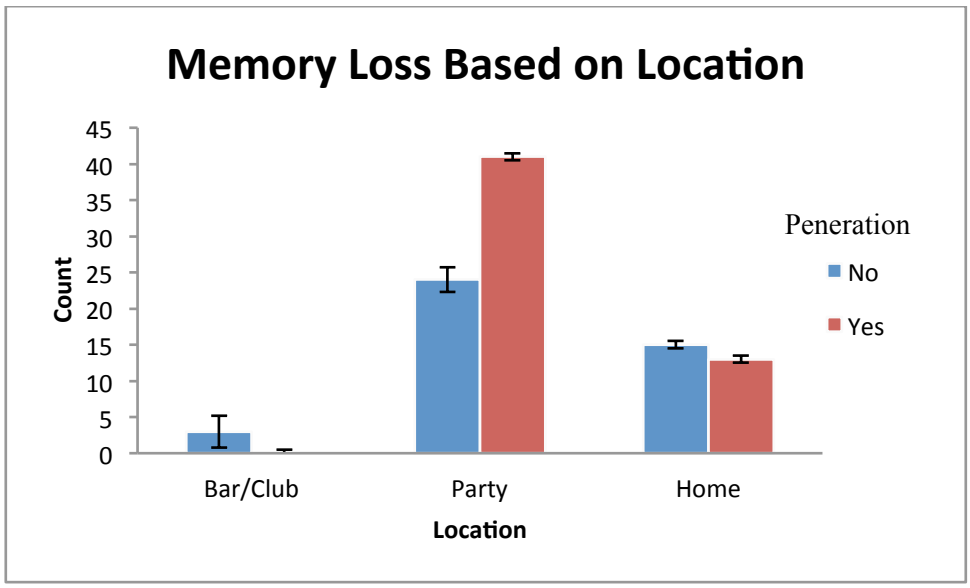

Memory Loss Based on Location
45
40
35
30
25
20
15
10
5
0
Count
Bar/Club
Party
Home
Location
Peneration
No
Yes

Figure 2.6.

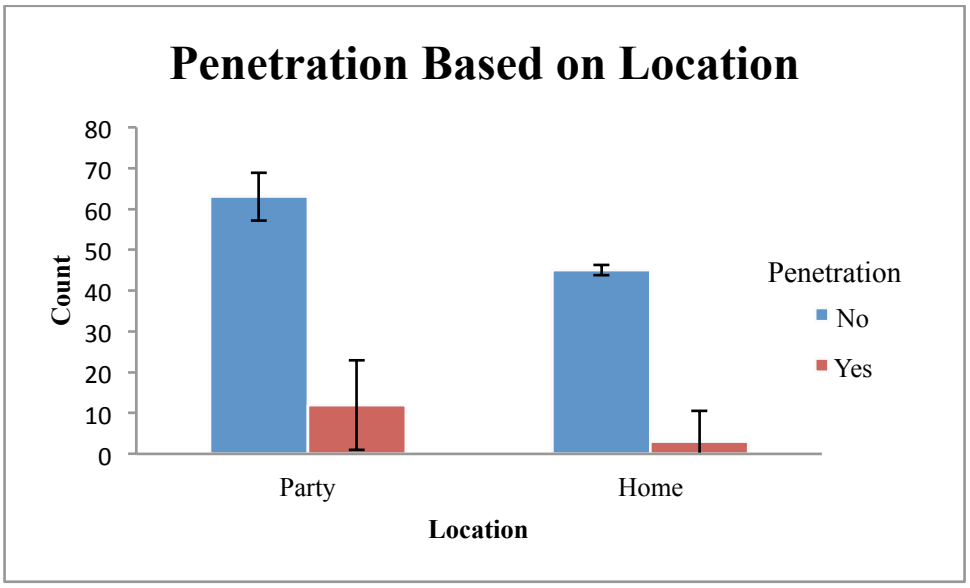

Penetration Based on Location
80
70
60
50
40
30
20
10
0
Count
Party
Home
Location
Penetration
No
Yes

Figure 2.7.

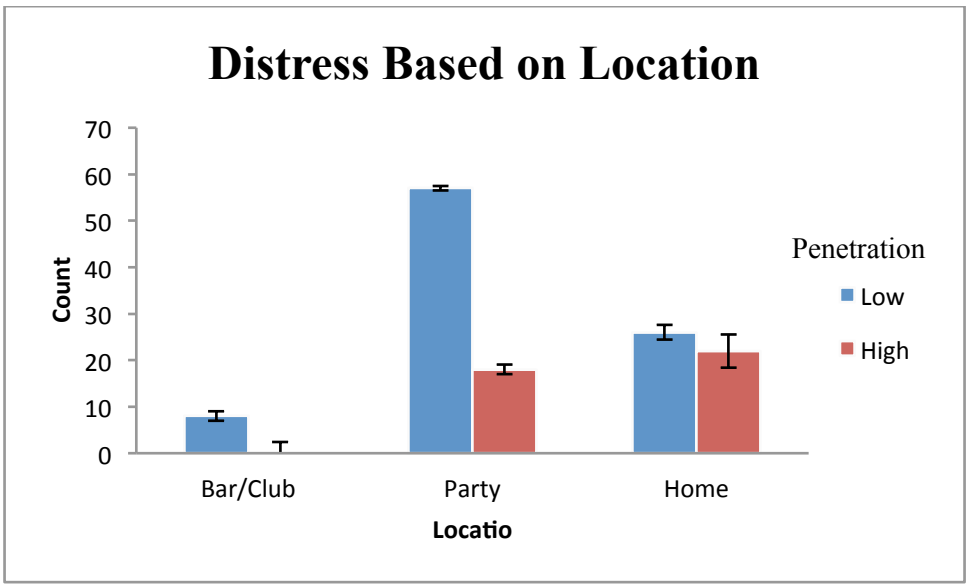

Distress Based on Location
70
60
50
40
30
20
10
0
Count
Bar/Club
Party
Home
Locatio
Penetration
Low
High

Figure 3.1.

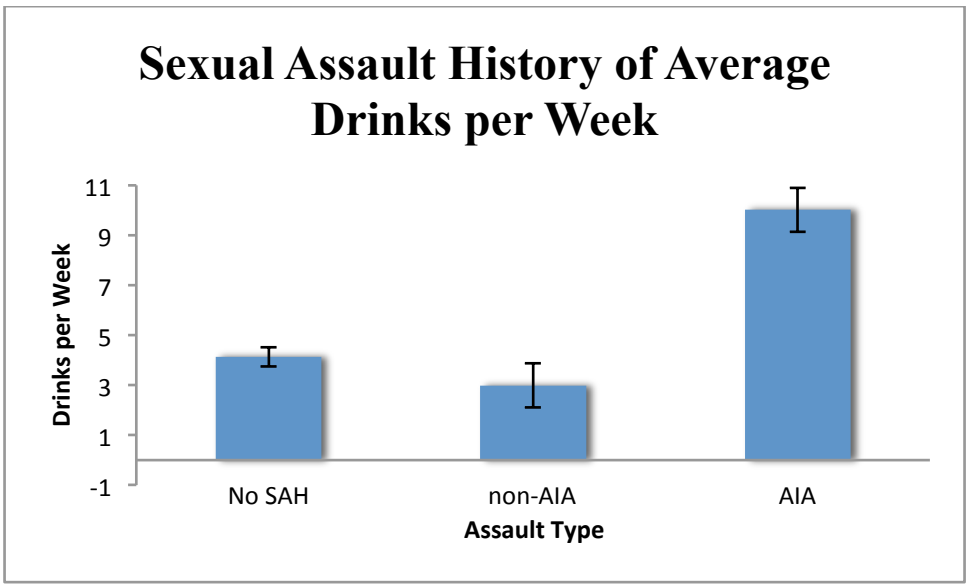

Sexual Assault History of Average Drinks per Week
Drinks per Week
11
9
7
5
3
1
-1
No SAH
non-AIA
AIA
Assault Type

Figure 3.2.

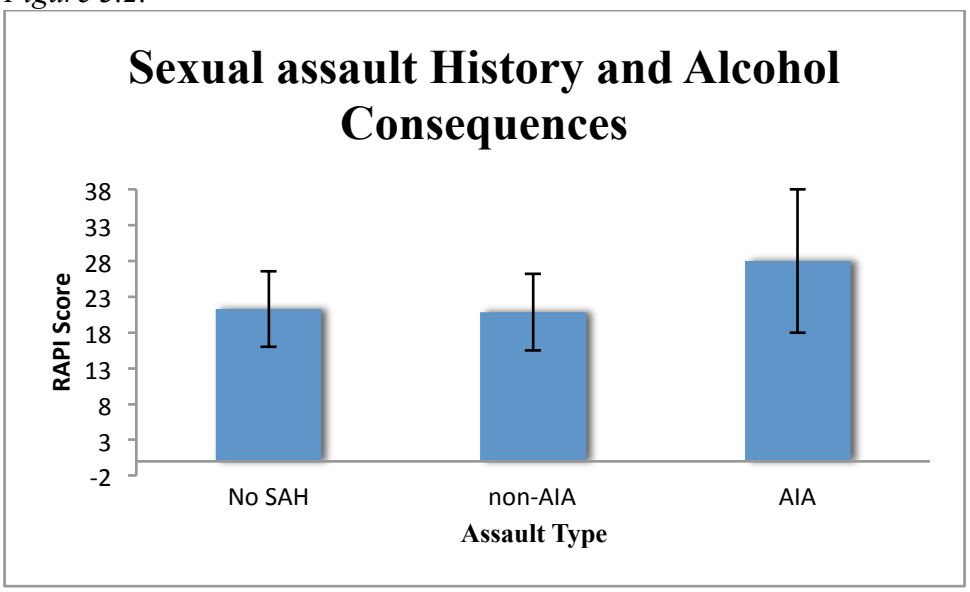

Sexual assault History and Alcohol Consequences
RAPI Score
38
33
28
23
18
13
8
3
-2
No SAH
non-AIA
AIA
Assault Type

Figure 3.3.

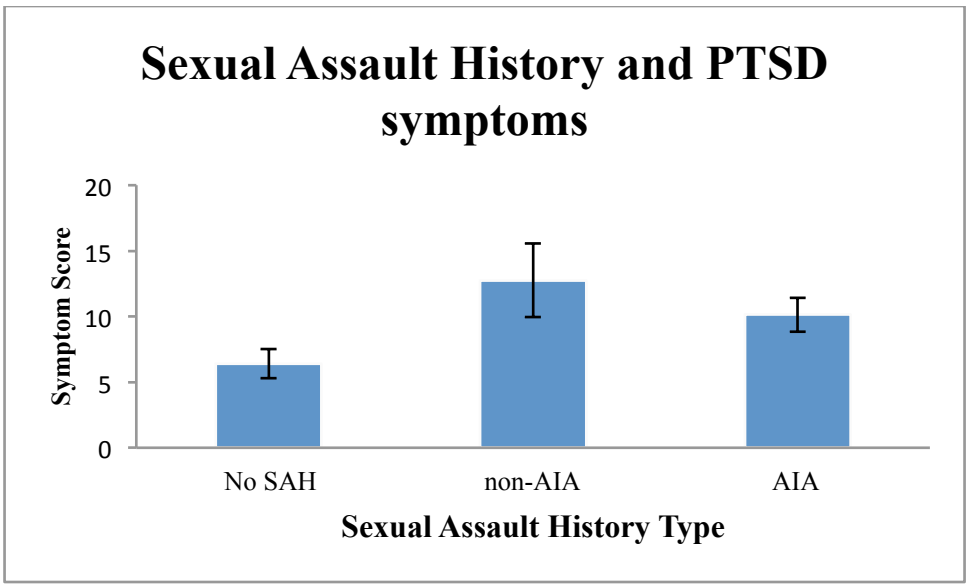

Sexual Assault History and PTSD symptoms
Symptom Score
20
15
10
5
0
No SAH
non-AIA
AIA
Sexual Assault History Type

Figure 3.4.

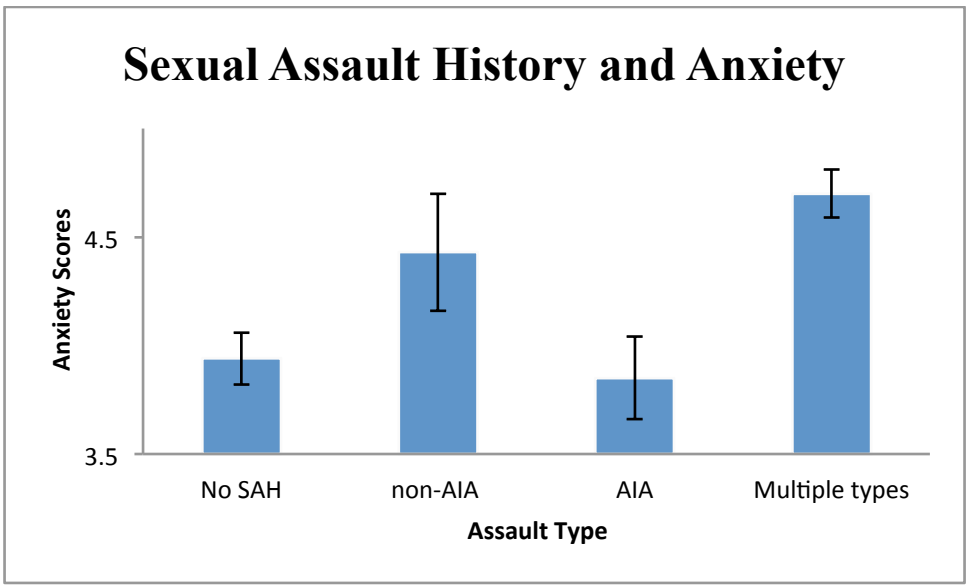
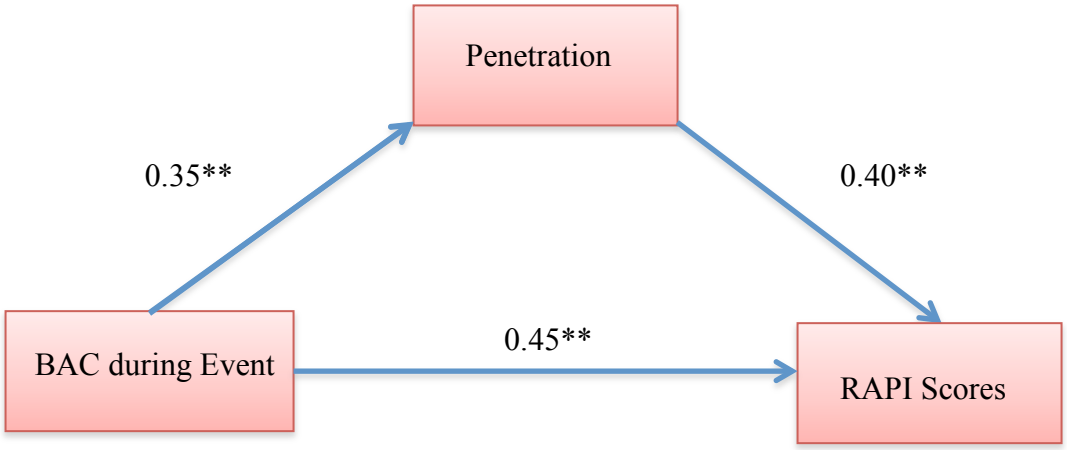

Sexual Assault History and Anxiety
Anxiety Scores
4.5
3.5
No SAH
non-AIA
AIA
Multiple types
Assault Type

Figure 3.5.



Appendix A: Alcohol Use Characteristics Questionnaire

The following questions ask you for information about alcohol use during the most recent event you identified during which you were incapacitated (for example, by drugs or alcohol), and unable to object or consent to sexual behavior.

How many drinks did you consume? ____

Within how many hours? _____

Did you consume 4 or more drinks within two hours prior to the event?
y/n

What was your level of intoxication?
Sober
A little intoxicated
Moderately Intoxicated
Extremely Intoxicated

Did you experience memory loss during the event?
y/n

Please rate your level of memory loss from 0 to 5, with 0 being none and 5 being no memory at all:
1
2
3
4
5

Was your physical movement and motor coordination impaired due to the use of alcohol during this event? y/n

Please rate your level of motor impairment from 0 to 5, with 0 being none and 5 being unable to control physical movement due to intoxication:
1
2
3
4
5

Was the perpetrator drinking?
y/n

What is your best estimation of how intoxicated the perpetrator was during the event?
Sober
A little intoxicated
Moderately Intoxicated
Extremely Intoxicated

Please rate how well you knew your perpetrator:
Didn't know at all
Slightly acquainted

Moderately acquainted
Extremely well acquainted

Did you consume any other substance in addition to alcohol during the event?
y/n

If yes, please check which substance(s)?
Marijuana
Caffeine
Cocaine
Amphetaminess
Heroin
Opiates
Inhalants
Other
None

What was the most severe physical injury you experienced during this event?
I was never physically injured
My most severe injuries were minor like bruises or scrapes
My most severe injuries were worse than bruises or scrapes but did not require medical treatment
My most severe injuries required medical treatment
My most severe injuries required hospitalization

When did this event occur?
Prior to entering college
Since entering college

Did the event occur on-campus?
y/n

Where did the event occur?
At a party
At a bar or nightclub
At a fraternity/sorority event
At the perpetrator's home
At my home
Outside
Other

How much do you blame things you did before the rape (e.g., walking alone at night)?
Not at all
Slightly to blame
Moderately to blame
Completely to blame

How much do you blame things about your personality (e.g., being too trusting) that you feel you can't change?
Not at all
Slightly to blame
Moderately to blame
Completely to blame

Please indicate the extent to which you felt victimized by this event:
I don't feel that I was victimized
I believe I was a victim of a serious miscommunication
I believe I was a victim of sexual assault
I believe I was a victim of rape or date rape
I believe I was a victim of a crime other than sexual assault or rape

How upsetting extent has this event for you at the time they occurred?
Not at all upset
Somewhat upset
Moderately upset
Extremely upset

Curriculum Vitae

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Education

Current	VA Puget Sound Health Care System – Seattle Division, Seattle, WA Clinical Psychology Internship (APA Accredited) Training Director: Stephen McCutcheon, Ph.D.
2009 – Current	University of Washington, Seattle, WA (APA Accredited) Clinical Psychology Candidate (APA Accredited) Ph.D. expected 2016; Advisor: William George, Ph.D. M.S., Clinical Psychology
2007 – 2009	University of Colorado, Denver, CO M.A., Clinical Psychology; Advisor: Elizabeth Allen, Ph.D.
2003 – 2007	Rollins College, Winter Park, FL B.A, Honors Degree in Psychology; Minor in Women's Studies

Honors and Awards

2015	Robert C. Bolles Graduate Dissertation Award, UW
2015	Alcor Graduate Fellowship, UW *Competitive award for dissertation research*
2014	Society for the Psychological Study of Social Issues Grant
2013 – 2015	NIAAA T32 Psychology Training in Alcohol Research Program Fellowship, UW *Provides 2 years of funding to an exemplary candidate selected by faculty*
2012	Graduate and Professional Student Senate Travel Award, UW
2007	Algernon Sydney Sullivan Humanitarian Award, Rollins College
2007	Marie Curie Research Award, Rollins College *Competitive award for excellence in social justice research*

Clinical Experience

Current	VA Puget Sound, Seattle, WA Rotations: Addictions Treatment Center, Telehealth, PTSD Outpatient Clinic Supervisors: Josie Tracy, Ph.D., Sari Gold, Ph.D., Jane Luterk, Ph.D.
2013 – 2015	Young Adult Health Behaviors, University of Washington Motivational Interviewing Adherent Study Therapist Supervisors: Dana Litt, Ph.D. & Mary Larimer, Ph.D.

2013 – 2014	Eating Disorders Partial Hospitalization Program, Seattle, WA ACT Group Therapist, Private Practice Supervisor: Alexia Giblin, Ph.D.
2012 – 2015	Behavioral Research and Therapy Clinics, University of Washington DBT Individual and Group Therapist, Treatment Development Clinic Supervisors: Marsha Linehan, Ph.D. & Kathryn Korslund, Ph.D.
2012 – 2015	Eating Disorders Partial Hospitalization Program, Seattle, WA DBT Group Therapist, Private Practice Supervisor: Alexia Giblin, Ph.D.
2011 – 2014	College Gambling and Co-Occurring Substance Use, University of Washington Motivational Interviewing Adherent Study Therapist Supervisors: Mary Larimer, Ph.D. & Ty Lostutter, Ph.D.
2011 – 2013	Department of Psychology, University of Washington Group Therapist, Functional Analytic Psychotherapy Practicum Supervisors: Mavis Tsai, Ph.D. & Robert Kohlenberg, Ph.D.
2011 – 2012	Child Psychology Northwest, Seattle, WA Neuropsychological Assessment Practicum Supervisor: Deborah Hill, Ph.D.
2010 – 2014	Department of Psychology, University of Washington Individual Therapist, Psychological Services and Training Clinic Supervisors: Timothy Popanz, Ph.D., David Markley, Ph.D., Robert Kohlenberg, Ph.D., and Corey Fagen, Ph.D.
2009 – 2012	Center for the Study of Health and Risk Behaviors, University of Washington Alcohol and Drug Intervention Coordinator, Health and Wellness Supervisor: Jason Kilmer, Ph.D.
2008 – 2009	Aurora Mental Health, Aurora, Colorado Milieu Therapist and Case Manager, Residential Treatment Programming Supervisor: Andrew Fitzpatrick, M.S.

Supervision Experience

2014	Department of Psychology, University of Washington Clinical Supervisor, Psychological Services and Training Clinic Vertical Supervisor: Robert Kohlenberg, Ph.D.
2014	Behavioral Research and Therapy Clinics, University of Washington Suicide Assessment Supervisor, DBT Approaches to Suicide Risk Assessment Vertical Supervisor: Marsha Linehan, Ph.D.
2011	Center for the Study of Health and Risk Behaviors, University of Washington Clinical Supervisor, Health and Wellness Vertical Supervisor: Jason Kilmer, Ph.D.

Clinical Consultation

2015	Evergreen State College, Olympia, WA Harm Reduction Consultant, Student Counseling Services
2014	Craft Brew Alliance, Portland, OR Harm Reduction Consultant
2013 – 2015	University of Washington, Seattle, WA College Alcohol and Drug Use Consultant, Health and Wellness
2013 – 2014	Community Behavioral Health, Philadelphia, PA DBT Consultant, Project Transition
2010 – 2014	Rosen Publishing Company, New York, NY Psychology Consultant
2008 – 2009	Mental Health Center of Denver, Denver, CO Program Evaluation and Statistical Consultant

Publications

Peer- Reviewed Publications

1. **Granato, H. F.**, Wilks, C. R., Miga, E. M., Korslund, K. E., & Linehan, M. M. (2015). The use of dialectical behavior therapy and prolonged exposure to treat comorbid dissociation and self-harm: The case of a client with borderline personality disorder and posttraumatic stress disorder. Journal Of Clinical Psychology, 71(8), 805-815. doi:10.1002/jclp.22207
2. Gilmore, A. K., Stappenbeck, C. A., Lewis, M. A., **Granato, H. F**., & Kaysen, D. (2015). Sexual assault history and its association with the use of drinking protective behavioral strategies among college women. Journal Of Studies On Alcohol And Drugs, 76(3), 459-464. doi:10.15288/jsad.2015.76.459
3. Gilmore, A. K., George, W. H., Jacques-Tiura, A. J., **Granato, H. F.,** Davis, K. C., Norris, J., & Heiman, J. (2014). Men's intentions to have sex with a new partner: Sexual and emotional responding, alcohol, and condoms. *Journal of Sex and Marital Therapy.* doi:10.1080/0092623X.2014.985350
4. Geisner, I. M., Bowen, S., Lostutter, T. W., Cronce, J. M., **Granato, H. F.,** & Larimer, M. E. (2015). Gambling-related problems as a mediator between treatment and mental health with at-risk college student gamblers. *Journal Of Gambling Studies*, 31(3), 1005-1013. doi:10.1007/s10899-014-9456-3
5. Gilmore, A. K., Koo. K., Nguyen, H. V., **Granato, H. F.,** & Kaysen, D. (2013). Sexual assault, drinking norms, and drinking behavior in lesbian and bisexual women. *Journal of Sex Research,* 39*(3),* 630-636. doi:10.1016/j.addbeh.2013.11.015
6. Gilmore, A. K., **Granato, H. F**., Lewis, M. A. (2013). The use of drinking and sexual protective strategies in association to condom use and sex-related alcohol use. *Journal of Sex Research, 50*, 470-479. doi: 10.1080/00224499.2011.653607

7. Lewis, M. A., **Granato, H. F**., Blayney, J. A., Lostutter, T. W., & Kilmer, J. R. (2012). Predictors of hooking up sexual behaviors and emotional reactions among U.S. College students. Archives Of Sexual Behavior, 41(5), 1219-1229. doi:10.1007/s10508-011-9817-2
8. Lewis, M. A., Litt, D. M., Blayney, J. A., Lostutter, T. W., **Granato, H. F.,** Kilmer, J. R., & Lee, C. M. (2011). They drink how much and where? Normative perceptions by drinking contexts and their association to college students' alcohol consumption. Journal Of Studies On Alcohol And Drugs, 72(5), 844-853. doi: 0.1007/s10508-011-9817-2.

Under-Review

1. **Granato**, H. F., Luk, J., Paves, A., Geisner, I., Cronce, J., Kilmer, J., Lostutter, T., & Larimer, M. (under review). The crossover effects of drinking protective behavioral strategies on gambling consequences among college gamblers with alcohol/drug abuse. Journal of Gambling Studies.
2. **Granato, H. G.,** Paves, A., Nguyen, H. V., Gilmore, A. K., Lewis, M. A. (under review). The moderating role of family history of alcoholism in the relationship between injunctive drinking norms and consequences. *Journal of Substance Abuse Treatment*.

In preparation

1. **Granato, H. F.,** George, W. H., & Norris, J**.** The role of sex-related alcohol expectancies on risk for incapacitated rape. In preparation.

2. **Granato, H. F.**, Brill, C., & George, W. H. The Intersection of Alcohol, Sexual Assault, and Mental Health Outcomes: A Qualitative Literature Review. In preparation.

3. Gilmore, A. K., Orchowski, L., Parkhill-Purdie, M., **Granato, H. F.,** Leone, R., Parott, D., Simpson, T. (in press). The Pervasive Association between Alcohol and Sexual Assault: Risk, Intervention, and Treatment. ACER Critical Review. In preparation.

Book Chapters

1. Nguyen, H. V., Koo, K. H., **Granato, H. F.,** & George, W. H. (2014). Individual variation in student alcohol use. *In Encyclopedia of Addictive Behaviors* (Vol. 4, p. 898). Cincinnati: Babson Press.

Newsletters

1. **Granato, H. F.,** Gilmore, A. K., & George, W. H. (2013). Alcohol and sex: Arousal and risk-taking experiments. *The Addictions Newsletter, APA Division 50.*
2. Gilmore, A. K., **Granato, H. F.,** & Davis, K. C. (2013). Alcohol-involved and intoxicated sexual assault measurement. *The Addictions Newsletter, APA Division 50.*

Presentations

Conference Presentations

1. **Granato, H. F.** & George, G. H. (2016, June). Heavy episodic drinking and alcohol-involved sexual assault: Risk factors related to post-assault drinking. Symposium to be presented at the 39th Annual Convention for the Research Society on Alcoholism, New Orleans, LA.
2. Chen, J. A., **Granato, H**., Shipherd, J., Simpson, T., & Lehavot, K. (2016, October). A qualitative analysis of transgender veterans' lived experiences. Poster to be presented at the 50th Annual Convention of the Association of Behavioral and Cognitive Therapies, New York, NY.

3. **Granato, H**., George, W. H. (2016, October). Alcohol use during sexual assault: An examination of What Differences Exist and How These Differences Impact Post-Assault Mental Health and subsequent alcohol use. Poster to be presented at the 50th Annual Convention of the Association of Behavioral and Cognitive Therapies, New York, NY.
4. **Granato, H. F.** (June 2015). Translational Research on Alcohol Use, Sexual Assault, and PTSD. Presented at the annual meeting for the Research Society on Alcoholism, San Antonio, TX.
5. **Granato, H. F.,** George, G. H., & Eakins, D. (June 2014). The Relationships among Alcohol Use, Sex-Related Alcohol Expectancies, and Incapacitated Sex. Presented for the annual meeting of the International Academy of Sex Research, Dubrovnik, CR.
6. Eakins, D.R., **Granato, H.F.,** George, W.H., & Cue Davis, K. (June 2014). The Role of Childhood Sexual Abuse and Ethnic Identity in Mental Health Outcomes. Presented at the Annual meeting of the International Academy of Sex Research, Dubrovnik, Croatia.
7. **Granato, H. F.,** Paves, A., Samuelson, M., Larimer, M. E., Lostutter, T. W., & Cronce, J. M. (June, 2014). Crossover effects of alcohol protective behavioral strategies on gambling consequences among college students. Presented at the annual meeting of Research Society on Alcoholism, Seattle, WA.
8. **Granato, H. G.** & George, G. H. (August 2013). The Role of Childhood Neglect and Mood in Male Sexual Arousal when Intoxicated. Presented at the annual meeting of the American Psychological Association, Honolulu, HI.
9. Paves, A.P., Alcid, K., Gilmore, A. K., **Granato, H. F.,** Nguyen, H., & Larimer, M. (August, 2012). Learning new things from familiar FACES: Examining alcohol expectancies among Filipino Americans. Presented at the annual meeting of the Asian American Psychological Association, Orlando, FL.
10. **Granato, H. G**. & Larimer, M. (June, 2012). Risk factors of comorbid substance use and gambling among a college sample. Presented at the annual meeting of the College on Problems in Drug Dependence Scientific Meeting, Palm Springs, CA.
11. Gilmore, A. K., Koo, K., Nguyen, H. V., **Granato, H. F.,** Kaysen, D. (June, 2012). Sexual assault, drinking norms, and drinking behavior in lesbian and bisexual college women. Presented at the annual meeting of Research Society on Alcoholism, San Francisco, CA.
12. **Granato, H. G.** & Lewis, M. A. (June, 2011). Injunctive Sex Norms Related to Alcohol Use. Presented at the annual meeting of the Research Society for Alcoholism, Atlanta, GA.
13. **Granato, H. G.** & George, W. H. (November, 2010). Heavy Episodic Drinking and Sexual Risk among a Community Sample of Social Drinkers. Presented at the annual meeting of the Society for the Scientific Study of Sexuality, Las Vegas, NV.
14. Olmos, A., DeRoche, K., & **Granato, H. F.** (November, 2008). Evaluating a Community Level HIV and Substance Use Prevention Program: The Fortaleciendo la Comunidad Project. Multipaper presentation presented at the annual meeting of the American Evaluation Association, Denver, CO.
15. **Granato, H. F.,** Richard, D. C. S., & Gilmore, A. K. (May, 2008). Date rape perceptions: The influence of relationship status and greek involvement. Presented at the annual meeting of the Association for Psychological Science, Chicago, IL.
16. Gilmore, A. K., Richard, D. C. S., Sims, D. M., & **Granato, H. F.** (May, 2008). Aversive sexual experiences and college satisfaction on a liberal arts campus. Presented at the annual meeting of the Association for Psychological Science, Chicago, IL.

17. Richard, D. C. S., Sims, D. M., Gilmore, A. K., **Granato, H. F.,** Stangle, C. (August, 2007). Hindsight bias and recall of anticipatory anxiety after a mild tropical storm. Presented at the annual meeting of the Association for Psychological Science, San Francisco, CA.
18. Harris, P. B., Houston, J. M., Gilmore, A. K**., Granato, H. F.** (March, 2006). Pro-Social Driving Behavior Scale (PDBS): Empirically deriving an item pool. Presented at the annual meeting of the Southeastern Psychological Association, Atlanta, GA.

Invited Lectures, Community Presentations, and Colloquia

1. **Granato, H. F.** (2015, August). *Alcohol Skills Training and Motivational Interviewing for College Students.* Two-day workshop presented to Evergreen Health and Wellness staff, Evergreen State College, Olympia, Washington.
2. Linehan, M. M., **Granato, H. F.,** Yang, J., Valenstein-Mah, H., Jerud, A., Staples, J., & Wilks, C. (2015, April). *Dialectical Behavior Therapy: Real Change is Possible.* Workshop presented at the University of Washington, Seattle, WA.
3. **Granato, H. F.,** Yang, J., & Paves, A. P. (2014, May; 2015, May). *Microaggression Workshop for Cultural Competence.* Workshop presented to 2nd year Clinical Psychology Graduate Students, Department of Psychology, University of Washington, Seattle, WA.
4. **Granato, H. F.** (2014, August & November). *If and How Much?: Alcohol Use Education for Hospitality Specialists.* Workshop presented to service line employees, Craft Brew Alliance, Portland OR and Kona, HI.
5. **Granato, H.F.** (2013, April). *Behavioral Interventions for Interpersonal Communication: A Case Study.* Presentation given at the Science Informed Case Presentations, Department of Psychology, University of Washington, Seattle, WA.
6. **Granato, H. F.** (2012, May). *The Relationships among Alcohol Use, Sex-Related Alcohol Expectancies, and Incapacitated Sex*. Paper presented at the Research Festival, Department of Psychology, University of Washington, Seattle, WA.

Additional Research Experience

Current	VA Puget Sound Health Care System, Seattle Division Doctoral Research Investigator Mentor: Keren Lehavot, Ph.D.
2013 – current	Department of Psychology, University of Washington Project Lead, Alcohol Use and Sexual Experiences Survey Mentor: William George, Ph.D.
2013 – 2014	Department of Psychiatry, University of Washington Project Therapist Mentor: Melissa Lewis, Ph.D. & Dana Litt, Ph.D.
2010 – 2014	Department of Psychiatry, University of Washington Research Assistant and Project Therapist Mentor: Mary Larimer, Ph.D
2010 – 2012	Department of Psychiatry, University of Washington

	Research Supervisor Mentor: Melissa Lewis, Ph.D.
2008 – 2009	Mental Health Center of Denver, Denver, Colorado Project Lead, Fortalaciendo Program Mentors: Antonio Olmos, Ph.D., Elizabeth Allen, Ph.D.
2008 – 2009	Comprehensive Risk Counseling Services, Mental Health Center of Denver Statistical Consultant and Research Assistant Mentor: Lydia Prado, Ph.D.
2007 – 2009	Department of Psychology, University of Colorado Denver Research Supervisor and Assistant Mentor: Elizabeth Allen, Ph.D.
2007 – 2008	Department of Psychology, University of Colorado Denver Research Assistant Mentor: Peter Kaplan, Ph.D.
2006 – 2007	Department of Psychology, Rollins College Principal Investigator, Honor's Thesis Mentor: David Richard, Ph.D.
2006 – 2007	Department of Psychology and the Sexual Assault Task Force, Rollins College Co-Investigator Supervisor: David Richard, Ph.D.
2006	Department of Psychology, Rollins College Research Assistant Supervisor: Sharon Carnahan, Ph.D.

Teaching Experience

Instructor

2014	Department of Psychology, University of Washington, Seattle, WA Clinical Psychology (rated 4.88 out of a 5-point scale)

Teaching Assistant

2011 – 2015	Department of Psychology, University of Washington, Seattle, WA *Graduate Courses:* Advanced Clinical Practicum in Functional Analytic Psychotherapy *Undergraduate Courses:* Human Sexuality (Lead TA), Social Psychology
2007 – 2009	Department of Psychology, University of Colorado, Denver, CO *Undergraduate Courses:* Introduction to Psychology, Human Development II, History of Psychology

Guest Lectures and Academic Advising

2014 – 2015	Department of Psychology, University of Washington, Seattle, WA Guest Lecturer: Human Sexuality, Health Psychology, Clinical Psychology
2013	Department of Psychology, University of Washington, Seattle, WA Drug and Alcohol Educator for Health and Wellness
2011 – 2012	Department of Psychology, University of Washington, Seattle, WA Graduate Writing Center Tutor

Professional Service and Committee Membership

2015 – present	APA Division 35, Psychology of Women, Section IV, LBT Concerns Graduate Student Committee
2015 – present	VA Puget Sound Healthcare System, Seattle, WA Internship Selection Committee
2015 – present	VA Puget Sound Healthcare System, Seattle, WA Training Committee
2014	The Graduate Psychology Action Committee, UW Graduate Student Representative
2013	National Council on Problem Gambling, Washington, D.C. Conference Programming Committee Member
2011 – 2012	Graduate Professional Student Senate, University of Washington, Seattle, WA Graduate Senator
2007	Sexual Assault Task Force, Rollins College, Winter Park, FL Co-founder
2006 – 2007	Feminist Majority Leadership Alliance, Rollins College, Winter Park, FL President
2006	Psychology Club, Rollins College, Winter Park, FL Treasurer
2005 – 2006	Psi Chi, Rollins College, Winter Park, FL Treasurer

Ad hoc Journal Reviewing Responsibilities

Addictive Behaviors
Journal of Gambling Studies
Journal of Interpersonal Violence
AIDS and Behavior
Psychology of Addictive Behaviors
Journal of Sex Research