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Sexual Abuse History, Alcohol Intoxication, and Women's Sexual Risk Behavior

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Abstract We examined potential differences in women's likelihood of sexual risk taking in a laboratory setting based on alcohol intoxication and sexual abuse history. Participants ($n = 64$) were classified as non-sexually abused (NSA) or as having experienced sexual abuse in childhood only (CSA) or adulthood only (ASA) and randomly assigned to consume alcoholic (.06, .08, or .10% target blood alcohol content) or non-alcoholic drinks, after which participants read and responded to a risky sex vignette. Dependent measures included vaginal pulse amplitude, self-reported sexual arousal, likelihood of engaging in condom use and risky sexual behaviors described in the vignette, and mood. NSA and ASA women did not differ significantly on any dependent measures. CSA women reported significantly lower likelihood of condom use and unprotected intercourse relative to NSA and ASA women. Intoxicated women reported significantly greater sexual arousal, positive mood, and likelihood of risky sex relative to sober women. Intoxicated CSA women reported significantly more likelihood of unprotected oral sex and less likelihood of condom use relative to intoxicated NSA and ASA and sober CSA women. CSA women's increased risk of sexually transmitted infections (STIs) may be driven by non-condom use and behavioral changes while intoxicated. These findings provide preliminary insight into situational influences affecting CSA women's increased STI risk.

Keywords Sexual abuse · Sexual arousal · Alcohol intoxication · Sexual risk · Condom use · Vaginal pulse amplitude

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Introduction

Correlational studies have established that sexually abused (SA) women, particularly women abused in childhood, are at higher risk of contracting HIV/STIs than are non-SA women (e.g., Koenig & Clark, 2003). Alcohol intoxication and risky sexual behavior have been globally implicated in this association, but laboratory experiments designed to examine possible causal streams underlying these relationships are lacking (George & Stoner, 2000). Without such reports, understanding SA women's behavior in risky sexual contexts remains limited. We conducted a laboratory experiment in which we compared the influence of alcohol intoxication on the sexual risk intentions of women who had experienced child SA, adult SA, or no SA.

STI/HIV Risk and Sexual Abuse History

Women's risk of HIV/AIDS infection from heterosexual contact with high-risk partners (e.g., injection drug users, men who have sex with men) is increasing (Karon, Fleming,

Steketee, & De Cock, 2001). The proportion of AIDS cases in the U.S. attributed to heterosexual contact increased from 3% in 1985 to 32% in 2005 (CDC, 2005a), and about 80% of new HIV cases in U.S. women are due to heterosexual transmission (CDC, 2007). In sub-Saharan Africa, heterosexual transmission is the primary mode of HIV infection (e.g., Mills, Singh, Nelson, & Nachega, 2006).

An extensive literature has linked SA history with higher rates of HIV/STI diagnoses (Arriola, Louden, Doldren, & Fortenberry, 2005; Koenig & Clark, 2003). CSA women are more likely than non-CSA women to have risky sex and be HIV positive while being less likely than their non-abused peers to report using condoms and less confident about refusing unprotected sex (Greenberg et al., 1999; Hamburger et al., 2004; Koenig & Clark, 2003; Petrak, Byrne, & Baker, 2000; Senn, Carey, Vanable, Coury-Doniger, & Urban, 2006; Testa, VanZile-Tamsen, & Livingston, 2005; Whitmire, Harlow, Quina, & Morokoff, 1999). Findings of increased sexual risk-taking behavior following assault also exist for ASA women, but published reports are limited and less consistent than they are for CSA women (Brener, McMahon, Warren, & Douglas, 1999; Campbell, Sefl, & Ahrens, 2004). In a review, Gorey and Leslie (1997) reported that about 22% of U.S. women have experienced child sexual abuse. Sexual behaviors included in CSA definitions ranged from non-contact behaviors (e.g., sexual invitations from an adult to a child) to penile penetration. In a stratified random population sample ($N = 472$), Elliott, Mok, and Briere (2004) found that 22% of women reported adult sexual abuse (ASA) involving physical contact. These findings suggest that the SA-STI link affects a broad population of women, has serious sexual health implications, is not well understood, and necessitates further scientific scrutiny.

Alcohol Consumption, Sexual Abuse History, and STI/HIV Risk

Experiments have shown that acute alcohol intoxication increases sexual risk-taking (for reviews, see George & Stoner, 2000; Hendershot & George, 2007). In experimental studies, alcohol intoxication increased intentions of engaging in sexual risk behavior (e.g., Maisto, Carey, Carey, & Gordon, 2002; Maisto, Carey, Carey, Gordon, & Schum, 2004) and salience of impelling cues (Davis, Hendershot, George, Norris, & Heiman, 2007; MacDonald, MacDonald, Zanna, & Fong, 2000), while decreasing perception of sexual risk (Fromme, D'Amico, & Katz, 1999; Fromme, Katz, & Rivet, 1997). Also, in sexual risk-taking contexts, alcohol has been shown to increase self-reported sexual arousal but not genital sexual arousal (George et al., 2009). In addition to increasing the likelihood of high-risk sex while diminishing risk perception, alcohol intoxication appears to compromise women's ability to protect themselves from sexual risk because intoxication reduces condom use (Maisto et al., 2002, 2004; National Institute of Allergy and Infectious Diseases, 2004). SA history is linked to higher rates of alcohol use in women, and SA women are more likely than their non-abused peers to use alcohol before sex (Wilsnack, Wilsnack, Kristjanson, Vogeltanz-Holm, & Harris, 2003). Thus, alcohol intoxication and SA history may work in tandem to increase SA women's sexual risk-taking.

Without laboratory examinations of in-the-moment processes that influence the relations among SA history, alcohol intoxication, and likelihood of STI risk behavior, it is difficult to pinpoint loci that may be appropriate for prevention interventions. For example, it is unknown whether targeting SA women's risk awareness or condom non-use–or both–would be most effective in addressing increased STI risk in situations involving alcohol. Such knowledge will allow interventions aimed at teaching SA women to minimize sexual risk by interceding at specific points on the risk pathway.

We sought to examine influences of abuse history and alcohol intoxication on sexual risk-taking and sexual arousal by placing women in a context analogous to a real-life risky sexual encounter–a hypothetical sexual risk vignette. We hypothesized that SA women would report greater likelihood of risky behavior than would their non-SA counterparts in that they would report less likelihood of condom use and greater likelihood of sexual activity with their partner in the vignette. Because CSA occurs earlier in life and may have a broader effect on psychosexual developmental processes than ASA (for a review, see Trickett & Putnam, 1993) and CSA women exhibit higher rates of sexual risk than NSA women (e.g., Petrak et al., 2000; Senn et al., 2006; Testa et al., 2005), we hypothesized that CSA women would report greater likelihood of risky sexual behavior in the response to the vignette than would NSA and ASA women. We also hypothesized that intoxicated women would report greater likelihood of risky behavior and stronger self-reported sexual arousal than would their sober counterparts. Given research indicating global associations between sexual abuse history, alcohol use, and sexual risk (e.g., Koenig & Clark, 2003; Wilsnack et al., 2003), a second aim was to evaluate whether alcohol intoxication and abuse history would interact depending on type of abuse history (CSA vs. ASA). Because of the dearth of prior research in this area, we did not specify SA group hypotheses for this interaction; however, we hypothesized that SA women who received alcohol would report greater likelihood of risky behavior than would sober and NSA women. A third aim was to continue building on findings regarding SA history and genital arousal. Three studies have indicated that SA women's genital arousal to erotic film stimuli was dampened relative to their non-SA peers (Laan & Everaerd, 1995; Rellini & Meston, 2006; Schacht et al., 2007), and we hypothesized that SA women would exhibit smaller increases in genital arousal relative to their NSA counterparts. Because no published work has compared SA groups' genital response to erotic stimuli, we did not make hypotheses regarding SA-group differences.

Method

Participants

This study was part of a larger study designed to evaluate the influence of alcohol intoxication and sexual arousal on risky sexual decision-making. Participants ($N = 64$) were recruited from a western urban community and university with flyers, newspaper advertisements, and letters to university students, which stated that the study involved "social drinking and decision-making." Potential participants were told via telephone that procedures included genital measures of sexual arousal and were screened for eligibility. To be eligible, women had to be (1) between the ages of 21 and 35 years, (2) interested in dating opposite-sex partners, (3) not currently in an exclusive dating relationship, (4) a social drinker, (5) have no current or past problem drinking, and (6) not currently taking medications or have a current health condition that contraindicated alcohol consumption. Single, heterosexual women were sampled to increase the external validity of the story, which asked participants to consider engaging in sexual activities with a novel male partner. All procedures were conducted with approval by the University of Washington's Institutional Review Board. Participants received $15 per hour.

Participants' mean age was 27.0 years ($SD = 4.0$). Age did not significantly differ based on abuse group. Most were European-American (81%). The remainder were multi-racial or other (8%), Asian-American (5%), African-American (3%), or Latina (3%). Sixty-nine percent were employed, with 65% reporting an annual income of less than $31,000. Thirty-six percent were college students. Employment and student status did not vary based on abuse group.

Measures

Abuse Groups

Participants were classified as having no history of SA (NSA), CSA only, or ASA only. Classification was based on Finkelhor's (1979) interview questions and Koss and Oros' (1982) Sexual Experiences Survey (SES). Both measures consisted of items that behaviorally assess abuse experiences. CSA participants reported no ASA events and at least one sexual contact event (touching, sexual fondling, oral sex, and/or intercourse) before their 14th birthday with someone five or more years older. ASA participants reported no CSA events and at least one unwanted sexual contact event (forced oral sex and/or attempted or completed rape) after their 15th birthday. Thirty-nine percent ($n = 25$) reported no abuse experiences, whereas 48% ($n = 31$) reported ASA only and 13% ($n = 8$) reported CSA only.

Sexual Behavior

Seventy-seven percent ($n = 49$) reported current use of condoms for birth control and 42% ($n = 27$) reported current use of hormonal contraception. There were no significant differences on these variables based on abuse history. Reported mean age of first consensual sexual intercourse was 17.5 years ($SD = 2.4$), with CSA women reporting the earliest age (16.4 years; $SD = 2.9$), followed by ASA women (17.0 years; $SD = 2.1$) and NSA women (18.3 years; $SD = 2.3$), though these differences were not significant. The reported mean number of opposite-sex partners with whom participants had vaginal sex was 11.4 ($SD = 9.0$), with a median of nine. One woman reported having 200 lifetime partners and was excluded from analyses using mean number of partners. CSA women reported the smallest number of lifetime vaginal sex partners (7.3; $SD = 5.5$). NSA women reported a larger number of partners than did CSA women (8.7; $SD = 6.3$), but this difference was not significant. ASA women reported significantly more partners than did both NSA and CSA women (14.5; $SD = 10.5; p = .02$). Twenty-seven percent ($n = 17$) reported ever having been pregnant. Most of the sample (97%) reported that their sexual orientation was primarily heterosexual. The remaining 3% reported equal amounts of homo- and heterosexual experiences. There were no significant group differences for these variables.

Sexual Functioning

Non-partner items from the Modified Brief Index of Sexual Functioning for Women (adapted from Taylor, Rosen, & Leiblum, 1994) were used to measure sexual function, including four desire items, two sexual health items, and two sexual activity items ($\alpha = .74$). Mean levels of sexual functioning (NSA $= 2.9, SD = .72$; ASA $= 3.1, SD = .80$; CSA $= 2.8, SD = .54$) did not significantly differ between groups.

Drinking Habits (Collins, Parks, & Marlatt, 1985)

Participants were determined to be "social drinkers" at the phone screen if they reported drinking between one and 40 alcoholic beverages per week and denied ever being significantly concerned about their drinking, being treated for problem drinking, or being told by friends, family, or a professional that they were problem drinkers. Given evidence linking SA history with higher rates of alcohol consumption, these criteria were intended to be inclusive of a wide range of drinking habits while excluding problem drinkers. Participants' mean reported number of drinks per week was 10.1 ($SD = 7.2$) with a range of 0–39. Nearly all (95%) participants reported drinking 20 or fewer drinks per week. CSA women reported drinking

the fewest drinks per week ($M = 8.4$; $SD = 6.0$), followed by NSA women ($M = 9.8$; $SD = 7.2$). ASA women reported drinking the most drinks per week ($M = 10.7$; $SD = 7.6$), although none of these differences were significant.

Mood

Items from the Positive (alert, excited, proud, inspired, enthusiastic, and interested) and Negative (upset, jittery, guilty, distressed, nervous, hostile, and ashamed) Affect Scales (Watson, Clark, & Tellegen, 1988) were administered to measure mood state after the sexual risk-taking assessment (see description below). Eleven items were added: horny, satisfied, happy, and amused (positive); and lonely, embarrassed, shocked, depressed, apathetic, angry, and disgusted (negative). Participants responded to items on 5-point Likert scales (1 = very slightly or not at all; 5 = extremely). The positive affect scale had acceptable inter-item reliability ($\alpha = .86$), whereas the negative affect scale had low reliability ($\alpha = .54$).

Arousal Induction

Immediately before reading the sexual risk story, participants underwent a sexual arousal induction that consisted of a sexually neutral film followed by two brief erotic films. Pilot-testing established that participants found the films arousing. The neutral film was a 2.5-min bird documentary. The erotic films were each 3 min long and depicted explicit sexual activities between a man and woman, including kissing, oral sex, and vaginal intercourse. The purpose of the erotic films was to create a sexually charged atmosphere to prime exposure to the eroticized vignette. Data on responses to the film are reported elsewhere (Schacht et al., 2007).

Sexual Risk-Taking Assessment

Participants read and responded to an erotic second-person vignette in which the participant was the protagonist.[1] She was introduced to a man by a mutual friend, described as being sexually attracted to him, and placed in a sexual situation with him where condoms were unavailable. The protagonist was depicted as taking oral hormonal contraceptives. Alcohol consumption of the person representing the participant in the story was matched to the participant's alcohol condition in the experiment (alcohol vs. no alcohol), whereas the opposite sex partner was always portrayed as drinking two alcoholic beverages. Participants rated their likelihood of engaging in unprotected sexual behavior on 5-point Likert scales (1 = "not at all"; 5 = "very much") for each of 10 items. These items were collapsed to form the following four dependent variables, likelihood of condom use (2 items; "How much do you wish you had a condom?" and "How likely are you to ask Dan if he has a condom?"), oral sex (4 items; "How much do you desire Dan to perform oral sex on you/to perform oral sex on Dan, regardless of whether you actually will?" and "How likely are you to allow Dan to perform oral sex on you/perform oral sex on Dan?"), genital contact (2 items; "How much do you desire to rub your clitoris against Dan's penis, regardless of whether you actually will?" and "How likely are you to rub your clitoris against Dan's penis?"), and unprotected intercourse (2 items; "How much do you desire Dan's penis inside of you?" and "How likely are you to allow Dan to put his penis inside of you?"). The vignette was pilot-tested through interviews with a separate sample of pilot participants, and pilot participants' feedback was incorporated to maximize the vignette's external validity. Participants found the vignette realistic (1 = "not at all"; 5 = "very much") for the typical woman ($M = 4.6$; $SD = .6$), and for themselves ($M = 4.3$; $SD = 1.1$).

[1] The story may be obtained from the corresponding author upon request.

Genital Arousal

Genital arousal was measured using vaginal photoplethysmography (Geer, Morokoff, & Greenwood, 1974; BioPac Systems, Inc., Santa Barbara, CA, model MP 150; Behavioral Technology, Inc., Salt Lake City, UT). Vaginal pulse amplitude (VPA) was continuously sampled at a rate of 62.5 samples per second and recorded using Acqknowledge software, version 3.7.2 (BioPac Systems, Inc.).

Self-Reported Ratings of Sexual Arousal

Participants reported their arousal on four Likert scale questions (1 = "no sexual arousal at all"; 7 = "extremely sexually aroused"): (1) "Overall, how much sexual arousal did you feel during the film clips/the story?" (Heiman, 1977); (2) "To what extent did you feel sensation in your genitals during the film clips/the story?" (Heiman & Rowland, 1983); (3) "How much sexual warmth (in your genitals, breasts, and body) did you feel during the film clips/the story?" (Meston, Heiman, Trapnell, & Paulhus, 1998); (4) "To what extent did you feel sexually absorbed in the sensory components of the film clips/the story?" (Koukounas & McCabe, 2001). These items formed a scale with good inter-item reliability ($\alpha = .94$).

Procedure

Participants were instructed not to drive to the laboratory, not to eat or consume caloric drinks for 3 h before their appointments, and not to drink alcohol or use recreational or over-the-counter drugs for 24 h before their appointments. A female experimenter administered an initial breath test with an Intoxilyzer 5000 (CMI Inc., Owensboro, KY) to ascertain a zero reading and obtained informed consent. All participants were given a

pregnancy test (Osom hCG-Urine Test, Genzyme General Diagnostics, San Diego, CA) and then left alone to complete background questionnaires.

Alcohol Procedures and Administration

Each participant was randomly assigned to one of four beverage conditions: expect and receive a nonalcoholic beverage or to expect an alcoholic beverage and receive one of three alcohol doses (target BAC of .06, .08, or .10%). Participants were weighed to determine the amount of alcohol needed to achieve the assigned target BAC. Drinks were consumed in 9 min and consisted of alcohol and fruit juice. BAC was tested every 3 min until participants reached criterion and then they began the sexual arousal induction and risky sex assessment. No-alcohol participants drank a volume of juice equivalent to the total volume of liquid that they would have received in the alcohol condition.

Arousal Induction and Risky Sex Assessment Story

After participants reached the criterion BAC, they were instructed via intercom to maximize their arousal. The instructions were "We would like to ask you to try as much as possible to relax and maximize your arousal during the remainder of the experiment. We would like you to try and become as aroused as possible." They were then instructed to insert the probe. The experimenter monitored the VPA signal via computer in a separate room while the participant viewed the films and read the story. Following the story, participants rated their mood and arousal and were then instructed by intercom to remove the probe.

Detoxification and Debriefing

Sober participants were debriefed, paid, and released upon completion of the experiment. Alcohol participants remained in the laboratory until their BAC dropped to .03, when they were debriefed, paid, and released.

VPA Data Cleaning and Reduction

VPA data were reduced to 25 samples per second. Visually apparent movement artifacts were removed from waveform data, which were then reduced to 30-s means and digitally transformed. Remaining movement artifacts, defined as a 100% increase or decrease in VPA relative to either adjacent 30-s interval, were imputed using the mean values of the adjacent intervals (Schacht et al., 2007). The dependent measure for VPA was a difference score of maximum response during the story minus minimum response during the neutral film. One ASA-alcohol subject's VPA data were not interpretable because of movement artifacts and she was excluded from VPA analyses.

Results

There were no significant differences on dependent variables based on alcohol dose. Therefore, to increase statistical power, alcohol conditions were collapsed to form two conditions: alcohol and no alcohol. Alcohol participants' BAC immediately before the story did not significantly vary based on abuse condition. A series of 3 (non-abused vs. CSA-only vs. ASA-only) × 2 (intoxicated vs. sober) univariate ANOVAs were conducted on four story variables (condom use, likelihood of oral sex, likelihood of genital contact, and likelihood of intercourse), two arousal variables (self-reported arousal and VPA), positive mood, and negative mood. Bonferroni corrections were used to control for familywise error rate associated with conducting multiple statistical tests. See Table 1 for correlations among dependent variables.

Sexual Risk-Taking Assessment

Table 2 shows the means of all dependent variables by abuse group and alcohol condition. We found a main effect of abuse group for likelihood of condom use with the partner in the vignette, $F(2, 63) = 5.4$, $p = .007$, partial $\eta^2 = .16$. CSA women reported significantly less likelihood of condom use

Table 1 Bivariate correlations among dependent variables for all subjects

Variable	1	2	3	4	5	6	7	8
1. Condom use	–	.02	.08	−.12	−.30*	−.13	.02	−.29*
2. Oral sex		–	.44**	.50**	.11	.40**	.36**	−.03
3. Intercourse			–	.52**	.05	.18	.17	.07
4. Genital contact				–	.12	.19	.23	.15
5. Genital arousal (VPA)					–	.17	.11	.33**
6. Self-reported arousal						–	.73**	.11
7. Positive mood							–	−.06
8. Negative mood								–

Note: * $p < .05$; ** $p < .01$; $N = 64$; $df = 62$

Table 2 Mean scores on dependent variables by condition

Condition	Dependent variable							
	Condom use *M* (*SD*)	Oral sex *M* (*SD*)	Genital contact *M* (*SD*)	Intercourse *M* (*SD*)	Positive mood *M* (*SD*)	Negative mood *M* (*SD*)	Genital arousal *M* (*SD*)	Reported arousal *M* (*SD*)
All subjects	4.5 (.9)	3.9 (.9)	4.0 (1.0)	4.5 (.8)	2.6 (.8)	1.1 (.2)	.04 (.04)	4.8 (1.5)
Sober ($n = 29$)	4.7 (.7)	3.6 (.9)	3.8 (.8)	4.5 (.8)	2.4 (.8)	1.1 (.1)	.03 (.03)	4.2 (1.5)
Intoxicated ($n = 35$)	4.3 (1.0)	4.1 (.9)	4.1 (1.1)	4.5 (.8)	2.9 (.8)	1.1 (.2)	.04 (.05)	5.2 (1.2)
NSA	4.7 (.5)	4.0 (1.0)	4.1 (.9)	4.6 (.7)	2.6 (.8)	1.1 (.2)	.03 (.03)	4.8 (1.4)
Sober ($n = 11$)	4.9 (.2)	3.8 (.9)	3.9 (.8)	4.7 (.6)	2.4 (.6)	1.1 (.1)	.04 (.04)	4.6 (1.6)
Intoxicated ($n = 14$)	4.5 (.6)	4.1 (1.1)	4.3 (1.0)	4.5 (.8)	2.8 (.9)	1.1 (.2)	.02 (.01)	5.0 (1.3)
ASA	4.5 (.8)	4.0 (.8)	4.1 (1.0)	4.6 (.4)	2.7 (.9)	1.1 (.2)	.04 (.03)	5.0 (1.5)
Sober ($n = 14$)	4.7 (.8)	3.7 (.8)	3.9 (1.0)	4.6 (.5)	2.4 (1.0)	1.1 (.2)	.03 (.03)	4.2 (1.5)
Intoxicated ($n = 17$)	4.4 (.7)	4.1 (.8)	4.2 (1.0)	4.6 (.4)	2.9 (.8)	1.2 (.2)	.04 (.03)	5.6 (1.2)
CSA	3.7 (1.5)	3.7 (1.0)	3.4 (1.0)	3.8 (1.4)	2.4 (.7)	1.2 (.2)	.07 (.09)	4.1 (1.4)
Sober ($n = 4$)	4.4 (1.0)	2.9 (.9)	3.5 (.4)	3.6 (1.6)	1.9 (.3)	1.1 (.1)	.04 (.02)	3.1 (.8)
Intoxicated ($n = 4$)	3.0 (1.8)	4.6 (.4)	3.3 (1.5)	4.0 (1.4)	2.9 (.7)	1.2 (.3)	.1 (.13)	5.1 (1.1)

Note: Values range from 1 to 5 except reported arousal (1–7) and genital arousal (in mV, unrestricted range)

than did NSA ($p = .005$) and ASA women ($p = .028$), whereas NSA and ASA women did not significantly differ. We also found a main effect of alcohol group for condom use, $F(1, 63) = 9.0$, $p = .004$, partial $\eta^2 = .13$, such that alcohol participants reported significantly less likelihood of condom use than did no-alcohol participants. We found a main effect of alcohol group for likelihood of oral sex with the partner in the vignette, such that alcohol participants reported significantly greater likelihood of engaging in oral sex than did no-alcohol participants, $F(1, 63) = 9.0$, $p = .004$, partial $\eta^2 = .14$. We found a main effect of abuse group for likelihood of unprotected intercourse with the partner in the story, $F(2, 63) = 4.0$, $p = .024$, partial $\eta^2 = .12$. Contrary to our hypothesis, CSA women reported significantly less likelihood of unprotected intercourse than did NSA ($p = .041$) and ASA women ($p = .024$). There were no other significant main effects or interactions for abuse or alcohol group.

Self-Reported and Genital Arousal

We found a main effect of alcohol group for self-reported sexual arousal immediately following the vignette, such that alcohol participants reported significantly greater sexual arousal than did no-alcohol participants, $F(1, 63) = 9.7$, $p = .003$, partial $\eta^2 = .14$. There were no other significant findings relating to self-reported arousal. We found no significant main or interaction effects of abuse or alcohol group for VPA.

Mood

We found a main effect of alcohol group for positive mood immediately following the vignette, such that alcohol participants reported significantly greater positive mood than did no-alcohol participants, $F(1, 63) = 6.6$, $p = .013$, partial $\eta^2 = .10$. There were no other significant effects or interactions based on abuse or alcohol group for positive or negative mood.

Discussion

The hypothesis that SA women would report greater likelihood of risky sexual behavior was partially supported. CSA women reported significantly less likelihood of condom use with their partner in the vignette than did NSA and ASA women, but also reported less likelihood of intercourse. ASA and NSA women did not significantly differ in regards to sexual risk likelihood. We also found support for the hypothesis that alcohol would increase the likelihood of risky sexual behavior: Intoxicated women reported significantly less likelihood of condom use and significantly greater likelihood of oral sex and unprotected intercourse than did sober women. Also as hypothesized, intoxicated women reported significantly greater sexual arousal than did sober women. We did not find support for our hypothesis that abuse history and alcohol intoxication would interact to increase sexual risk-taking. Also, in contrast to past reports, we found no significant differences in genital arousal based on abuse history

(Laan & Everaerd, 1995; Rellini & Meston, 2006; Schacht et al., 2007).

The finding that CSA women reported significantly less likelihood of condom use relative to NSA women was consistent with other evidence that CSA women are less likely to use condoms than are non-abused women (Greenberg et al., 1999) and have higher rates of STIs than do non-CSA women (Arriola et al., 2005; Koenig & Clark, 2003). Partner communication and women's perception of their partners' attitudes towards condoms are the strongest psychosocial predictors of condom use (Sheeran, Abraham, & Orbell, 1999), and CSA women are less confident about refusing unprotected sex than are non-abused women (Greenberg et al., 1999; Hamburger et al., 2004). This finding may suggest that CSA women's increased sexual risk is driven in part by condom negotiation reticence. It is also possible that CSA women reported less likelihood of condom use than did NSA and ASA women because they were less interested in intercourse with their partner in the vignette. However, we found no significant difference based on abuse history for another risky behavior—likelihood of genital contact—which implies that CSA women may be as likely as ASA and NSA women to engage in some STI risk behaviors without condoms.

We replicated findings indicating that alcohol intoxication increases sexual risk behavior (Davis et al., 2007; MacDonald et al., 2000; Maisto et al., 2002, 2004). Also congruent with past work (e.g., George et al., 2009) was the finding that alcohol intoxication increased self-reported, but not genital, sexual arousal. Condom negotiation while under the influence of alcohol, including psychoeducation regarding alcohol's deleterious influence on condom negotiation, may be worthy targets for sexual risk prevention programs. Null findings regarding the interaction between abuse history and alcohol intoxication on sexual risk behavior may have been due to lack of power. However, it is also possible that the influence of alcohol intoxication and SA history have opposite effects (i.e., one may disinhibit whereas the other inhibits), thereby cancelling each other out.

CSA and ASA have both been linked to subsequent psychopathology (e.g., Briere & Jordan, 2004; Finkelhor & Browne, 1988; Paolucci, Genuis, & Violato, 2001; Trickett & Putnam, 1993), but same-sample comparisons of individuals reporting histories of CSA and ASA are rare. Therefore, the extent to which CSA and ASA have overlapping sequelae is unclear. We found that CSA women significantly differed from NSA and ASA women on some variables, but found no significant differences between ASA and NSA women. Our CSA sample was small, but these findings are consistent with the notion that the timing of abuse is an important consideration when predicting subsequent behavior changes. Noll, Trickett, and Putnam (2003) described behavior patterns of "sexual preoccupation" (e.g., increased sexual activity and partners) and "sexual aversion" (e.g., increased rates of sexual dysfunction) in CSA women, an idea proposed by Finkelhor and Browne (1988). The finding that CSA women reported less likelihood of intercourse relative to NSA and ASA women could be interpreted to indicate sexual aversion, although other interpretations are possible (e.g., social desirability). Furthermore, it is possible that situational factors (e.g., alcohol intoxication or the sexual activity in question) can affect whether sexually preoccupied or sexually aversive behavior is elicited from CSA women.

Limitations, Strengths, and Future Directions

Conclusions regarding these results should be made cautiously due to sampling issues. Our sample was small; thus, these findings may be limited in generalizability. In addition, our null finding for VPA differences, which contradicts past findings with CSA women (Laan & Everaerd, 1995; Rellini & Meston, 2006; Schacht et al., 2007), may be due to lack of power because of sample size or to a weaker VPA response to textual (the vignette) relative to visual (films) erotic stimuli. Future work should re-evaluate the possibility that abuse history and alcohol intoxication interact to influence sexual risk behavior. Other issues that may limit generalizability of results are volunteer and sampling biases. As is typical of participants willing to participate in studies using genital measures of sexual response (Strassberg & Lowe, 1995), our sample appeared to be more sexually experienced than other U.S. women in their age group, reporting a median of nine lifetime heterosexual partners. In a recent national survey, women aged 25–29 years reported a median of four lifetime heterosexual partners (including vaginal, oral, and anal sex; CDC, 2005b). In addition, we recruited only single women who reported that they were social, non-problem drinkers. The extent to which the women in our sample, particularly CSA-only women, were representative of larger samples, is unknown. Finally, the vignette paradigm used in this study may be limited in its external validity.

We did not evaluate partner interactions and condom negotiation, which influence in-the-moment decisions regarding condom use, nor did we evaluate alcohol's expectancy effects, which could account in part for our findings. Our work may be oversimplified relative to real-life situations, but represents an initial snapshot of SA women's responses to a sexual risk situation, which can provide a starting point for more complex evaluations of these processes. More work is needed to understand the partner interactions relevant to condom use.

These findings are important because of the lack of published reports comparing CSA-only and ASA-only women on any outcome variables. These findings also speak to the extensive literature linking alcohol consumption, sexual assault, and HIV/STI risk (e.g., Abbey, Zawacki, Buck, Clinton, & McAuslan, 2004; Senn et al., 2006).We found differences in likelihood of risky sex between abuse groups, which may indicate that CSA-only women's experience and

behavior in sexual situations diverges from that of other SA women's experiences. Further research in this area with a larger, more varied sample is warranted.

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