Published in final edited form as:

J Sex Marital Ther. 2017 February 17; 43(2): 121–131. doi:10.1080/0092623X.2015.1124304.

Women's Sex-Related Dissociation: The Effects of Alcohol Intoxication, Attentional Control Instructions, and History of Childhood Sexual Abuse

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Abstract

This study examined influences of alcohol intoxication, attentional control, and CSA severity on sex-related dissociation. Sex-related dissociation is defined here as dissociation (e.g., feeling as if the world is unreal and feeling disconnected from one's body) during sexual activity or in the presence of sexual stimuli. Women ($N=70$) were randomized to a 2 (alcohol condition: none, .10% peak breath alcohol concentration) $\times$ 2 (attentional control instructions: none, “relax and maximize” sexual arousal) experiment and exposed to sexual stimuli. Alcohol intoxication was positively associated with sex-related dissociation. CSA severity and sex-related dissociation were positively associated in the no instruction condition but not in the “relax and maximize” condition. For some women, efforts to relax and maximize sexual arousal may buffer the association between CSA and sex-related dissociation.

Women with a childhood sexual abuse (CSA) history are at heightened risk for problematic sexual health outcomes including re-victimization, sexually transmitted infections, and sexual dysfunction (e.g., Messman-Moore & Long, 2003; Rellini, Elinson, Janssen, & Meston, 2012). Sex-related dissociation, defined as dissociation during sexual behavior or in the presence of sexual stimuli, may be a mechanism linking CSA history to sexual health outcomes. Dissociation is a disruption in the perceptions of oneself and the environment and conditions that increase attentional focus may mitigate dissociation. Women with CSA histories have high rates of alcohol use (see Sartor, Agrawal, McCutcheon, Duncan, & Lynskey, 2008 for a review) and alcohol intoxication can result in a phenomenological state similar to dissociation (Klanecky, McChargue, & Bruggeman, 2012). Scant attention has been devoted to investigating sex-related dissociation until recently (e.g., Bird, Seehuus, Clifton, & Rellini, 2013; Hansen, Brown, Tsatkin, Zelgowski, & Nightingale, 2012) and no studies have investigated associations among CSA severity, alcohol intoxication, attentional control instructions, and sex-related dissociation.

Childhood Sexual Abuse (CSA) and Dissociation

Approximately 30% of women with a CSA history report dissociation (Mulder, Beautrais, Joyce, & Fergusson, 1998; Van der Kolk, 2003). The reputed function of dissociation is experiential avoidance, creating distance from the present to escape traumatic memories and

discomfort (Marx & Sloan, 2005; Putnam & Trickett, 1997). Dissociation that occurs after the threat has dissipated may interfere with healthy sexual processes related to consensual intimacy (Freyd et al., 1998; Hansen et al., 2012; Marx & Sloan, 2005).

Qualitative research (Sutherland et al., 2014) suggests that some women with a CSA history report feeling triggered by certain types of touch, sexual activities or discomfort with intimacy, and they experience dissociation as a result. The few studies that have quantitatively examined CSA history and sex-related dissociation (e.g., Bird et al., 2013; Hansen et al., 2012; Stappenbeck et al., in press) have yielded mixed results. Disparate findings may be attributable to sample characteristics and measurement of sex-related dissociation. Contextual factors including alcohol intoxication and attentional factors may elucidate previously disparate findings.

Attentional Control Instructions and Dissociation

Attentional shifts are characteristic of dissociation (Amrhein et al., 2008; Freyd et al., 1998), but the combined influences of CSA history and attentional control instructions have yet to be examined in regards to sex-related dissociation. Relaxing in the moment and maximizing sexual arousal may mitigate disruptions in attention created by dissociation and perhaps decrease the dissociation itself. Mindfulness-based cognitive-behavioral therapies, which focus individuals on what they experience in the moment, are used to treat sexual dysfunction and distress (Brotto, Basson, & Luria, 2008) and are effective for women with a CSA history (Brotto, Seal, & Rellini, 2012). Understanding in-the-moment techniques, including the influence of attentional control of sexual arousal on sex-related dissociation, have clinical intervention potential.

Alcohol and Dissociation

A CSA history increases risk for alcohol abuse (Sartor et al., 2008), and alcohol use is associated with dissociation among those with a CSA history (Klanecky et al., 2012). However, the association between acute alcohol intoxication and sex-related dissociative experiences is unknown. One study examined acute alcohol intoxication effects on sex-related dissociation and found that intoxication was associated with greater sex-related dissociation during a second person sexual scenario (Stappenbeck et al., in press). The interaction between CSA severity and alcohol intoxication on sex-related dissociation was not examined. Further, attentional control exercises while intoxicated may have important clinical implications for those with CSA histories.

Current Study

Most research examining dissociation utilizes retrospective reporting (Zoellner, Sacks, & Foa, 2007) and only one study has experimentally examined in-the-moment sex-related dissociation (Stappenbeck et al., in press). The current study examined sex-related dissociation using a 2 (no alcohol vs. 10% target BrAC alcohol condition) $\times$ 2 (no attentional control instructions vs. attentional control instructions to relax and maximize sexual arousal) experimental design to investigate in-the-moment processes during exposure to sexual

stimuli. We investigated three factors that may be associated with women's sex-related dissociation: CSA severity, acute alcohol intoxication, and attentional control instructions. We hypothesized that both acute alcohol intoxication and CSA severity would be positively associated with sex-related dissociation. We also hypothesized that attentional control instructions would only be associated with sex-related dissociation in the context of a three-way interaction with CSA severity and alcohol intoxication. We predicted that as CSA severity increased, when women were intoxicated and were not given any attentional control instructions, sex-related dissociation would increase more compared to when women were asked to relax and maximize their sexual arousal. That is, when given no attentional control instructions alcohol intoxication may increase sex-related dissociation among women with more severe CSA histories, whereas attentional control instructions may ground women, bringing their attention to the present moment thereby reducing sex-related dissociation.

Method

Participants

Seventy women, ages 21-35 ($M = 25.2$, $SD = 4.1$), were recruited from an urban community and a large university for a study on "social drinking and decision making". Women were eligible if they were interested in dating men, not in a committed relationship and if they had consumed 4 or more drinks on one drinking occasion in the past 6 months. Women were excluded if they reported current or past problem drinking¹, were currently taking medications or had a health condition that contraindicated alcohol use (National Advisory Council on Alcohol Abuse and Alcoholism, 2005). The majority of participants were Caucasian (70.8%), not students (55.5%), had completed some college (85.9%), were employed (65.5%), and were single (86.4%). Participants drank an average of 11.5 ($SD = 9.1$) drinks per week.

Procedure

All study procedures were approved by the university's IRB. Potential participants completed a brief telephone screening to assess eligibility and were scheduled for a laboratory session. Upon arrival, participants gave informed consent and their adherence to pre-alcohol administration instructions was checked.² Participants then completed computerized background questionnaires in a private room.

Participants were randomized to receive either non-alcoholic or alcoholic beverages. Participants were weighed to determine the amount of 190-proof grain alcohol needed to achieve a peak BrAC of .10% (dosage = 1.00 mL alcohol/kg body weight; 1:6 alcohol to fruit juice ratio). Assessment of BrAC took place every three minutes until participants reached the target criterion (BrAC .06) to ensure that sexual stimuli was presented during

¹Potential participants were excluded if they reported having been (a) told by a professional that they had problem with alcohol, (b) ever seriously concerned about their own drinking, or (c) treated or advised to seek treatment for drinking. They were also excluded if they had ever experienced any of the following after drinking alcohol: (a) fainting or seizure, (b) highly unusual flushing of the skin, or (c) severe or unusual psychological reaction. Potential participants were also excluded if they reported average consumption greater than 40 drinks/week.

²Not to drive, not to eat or consume caloric drinks for three hours before the appointment, and not to drink alcohol or use recreational or over-the-counter drugs for 24 hours prior). Participants were also given a pregnancy test if they were in the alcohol condition.

the ascending limb of the alcohol curve (Holdstock & de Wit, 1998; Martin, Earleywine, Musty, Perrine, & Swift, 1993). In the no alcohol condition, participants were given the same volume of fruit juice as they would have received in the alcohol condition using a yoked control design (Giancola & Zeichner, 1997; Schacht, Stoner, George, & Norris, 2010a).³

After beverage administration, participants were randomly assigned to one of two attentional control instruction conditions. Either no instructions were given regarding controlling their sexual arousal or participants were asked to “relax and maximize” their sexual arousal. Next, participants watched two 3-min erotic films (New Era Productions and VCA Productions). After reporting their sexual arousal level, participants then projected themselves into a heat-of-the-moment eroticized scenario. The assigned alcohol condition matched the alcohol depicted in the story. For a description of the scenario see Schacht et al., 2010b.

Participants again completed measures of sex-related dissociation experienced since the beginning of the erotic films, current sexual arousal, and realism of the scenario. Participants in the attentional control instruction condition described methods they used to relax and become as aroused as possible. Participants remained in the lab until their BrAC fell below .03% (National Advisory Council on Alcohol Abuse and Alcoholism, 2005), were debriefed, and paid \$15/hour.

Measures

Childhood sexual abuse (CSA)—CSA severity was measured using the Childhood Trauma Questionnaire-Sexual Abuse Subscale (CTQ-Sexual Abuse; Bernstein & Fink, 1998). Participants rated how much each of five statements was true about growing up as a child and teenager (e.g., “When I was growing up, someone molested me”) from 0 = *never true* to 4 = *always true*. Item scores were summed creating a possible range of 0 - 20 ($\alpha = .95$).

Sex-related dissociation—Three items based on general measures of dissociation (Bremner et al., 1998; Briere, Weathers, & Runtz, 2005) were used to measure the maximum intensity of sex-related dissociation. Participants were asked to think about their experiences since they first began watching the erotic films and were asked about feeling disconnected from all or part of their body, if the world seemed unreal, and if they “spaced out” from 1 = *not at all* to 7 = *completely*. Item scores were averaged ($\alpha = .77$).

Sexual arousal—Participants rated their sexual arousal after the erotic videos and after the scenario about experiences felt “in the last 10 minutes.” Items included sexual arousal (Kuffel & Heiman, 2006), sensation in genitals (Heiman & Rowland, 1983), sexual warmth in genitals, breasts, and body (Meston, Heiman, Trapnell, & Paulhus, 1998), and sexual absorption in the sensory components of the stimuli (Koukounas & McCabe, 2001).

³Although physiological sexual arousal was not part of the analyses of the current paper, we note that vaginal photoplethysmography (BioPac Systems Inc., Santa Barbara, CA; Model MP 150) was used to measure genital arousal during the films and heat-of-the-moment scenario. Before the beverage was administered, the experimenter instructed the participant on how to insert the plethysmograph probe, and after the beverage was consumed, instructed the participant to insert the device.

Responses from both times were averaged to create a single mean ($\alpha = .93$). Participants responded using 7-point scales (1 = *none at all*; 7 = *extremely*).

Data Analytic Plan

Descriptive information on differences in CSA severity and sexual arousal between the conditions were examined using two 2 (alcohol condition) $\times$ 2 (attentional control condition) ANOVAs. Hierarchical multiple regressions were performed with alcohol intoxication, attentional control instruction condition, and CSA severity as predictors of sex-related dissociation. We controlled for the effects of sexual arousal to examine the influence of instruction condition beyond the influence of sexual arousal. In the full model, Step 1 included sexual arousal and Step 2 included main effects for CSA severity, alcohol condition, and instruction condition. In Step 3, all two-way interactions were included and in Step 4, the three-way interaction among CSA severity, alcohol condition, and instruction condition was included. The model was trimmed, removing the non-significant interactions to create the most parsimonious model (Aiken & West, 1991).

Results

Means and standard deviations of CSA severity and sex-related dissociation by condition are shown in Table 1. ANOVAs revealed a significant main effect of alcohol condition on sexual arousal. Participants in the alcohol condition ($M = 5.3$, $SD = 1.2$) compared to the no alcohol condition ($M = 4.6$, $SD = 1.5$) reported higher sexual arousal, $F(1,69) = 4.2$, $p = .045$. There were no other significant main effects of alcohol condition or attentional instruction condition or their interaction on sexual arousal or CSA severity (all p 's $> .09$). Consistent with previous literature (Beck & Baldwin, 1994), participants who received the attentional control instructions reported using cognitive strategies to relax and maximize their sexual arousal such as “watching the video intently and letting the material completely occupy my thoughts.” Finally, participants reported that the scenario was realistic (George et al., 2009).

Sexual arousal was not significantly associated with sex-related dissociation in Step 1 of the full model (Table 2, Model 1). In Step 2, there were no significant main effects. In Step 3, there was a significant interaction between attentional instruction condition and CSA severity. The three-way interaction between alcohol condition, attentional instruction condition and CSA severity was not significant in Step 4. In the final model (Table 2, Model 2), after trimming non-significant interactions, a significant positive main effect of alcohol emerged, as hypothesized, and the two-way interaction between CSA severity and attentional instruction condition was significant. Simple slopes analyses (Aiken & West, 1991; see Figure 1) showed that in the no attentional control instruction condition, CSA severity was positively associated with sex-related dissociation, $t(69) = 2.37$, $p < .05$. However, in the attentional control instruction to “relax and maximize” sexual arousal condition, CSA severity was not significantly associated with sex-related dissociation, $t(69) = -1.41$, $p = .16$.

Discussion

Findings extend previous knowledge about how alcohol and attentional control instructions may interact with CSA severity in sex-related dissociation. This is the first study to use an experimental manipulation to show effects of attentional control instructions on the relationship between CSA severity and sex-related dissociation. The association between the interaction of attentional control instructions and CSA severity and sex-related dissociation suggests that giving these specific attentional control instructions may attenuate the dissociative response to sexual stimuli in some women with a CSA history. Further, acute alcohol intoxication was associated with increased sex-related dissociation consistent with past research (Stappenbeck et al., in press).

Maximizing sexual arousal may increase attentional focus on the present-moment but relaxing may also attenuate sex-related dissociation to the extent that dissociation is in response to distress. Whether the findings are due to efforts to relax, maximize sexual arousal, or both, is unclear from this study design. This finding is significant after controlling for sexual arousal, suggesting that instructions may impact sex-related dissociation over and above any influence of achieved sexual arousal. Sexual arousal did not differ between the instruction conditions, providing further support that the attentional instructions likely had an effect on sex-related dissociation separate from sexual arousal.

The hypothesized three-way interaction between alcohol intoxication, CSA severity, and attentional control instructions was not supported. Given that there was a significant main effect of alcohol intoxication, it is possible that alcohol may increase sex-related dissociation for women independent of CSA history and the presence or absence of attentional instructions.

Clinical Implications

To the extent that sex-related dissociation is characterized by disruptions in perceptions of oneself and the environment, these experiences may impact sexual health. Distraction from or failure to attend fully and positively to sexual activity in-the-moment can reduce sexual arousal (Barlow, 1986; Nelson & Purdon, 2011). Although no empirical work has aimed to alleviate sex-related dissociation, research supports the effectiveness of mindfulness and body awareness techniques on increasing sexual functioning in women with and without CSA histories (Brotto, Seal, & Rellini, 2012). While sensate focused therapy (Masters & Johnson, 1970) is also an empirically supported treatment for sexual dysfunction utilizing present-moment focus, it encourages increased awareness of one's experience without focusing on the goal of sexual arousal or orgasm. The explicit effort given to avoid these sexual goals is in opposition to the instructions given in the current study (Heiman & Rowland, 1983). Further research would clarify how useful different types of instructions are for affecting sex-related dissociation. It is important to note that some women report that attention to bodily sensations can trigger dissociation (Rothschild, 2000). In these cases, present-moment awareness without support might be detrimental. Clinicians may also want to probe for alcohol intoxication during sexual activity and its dissociative effects, which may interfere with present-moment awareness.

Limitations, Strengths, and Future Directions

Some limitations related to measurement constrain our interpretations. Although the measure of sex-related dissociation has face validity and adequate inter-item reliability, the measure does not assess all dissociative experiences. However, the items are similar to other measures of dissociation (Bernstein & Putnam, 1986; Briere et al., 2005). In addition, sex-related dissociation was not measured before the sexual stimuli. It is possible that dissociative experiences measured in the laboratory were not due to the sexual stimuli per se but were related to general dissociation. In an attempt to ascertain only sex-related dissociation, participants were asked to report only on dissociation experienced during the sexual stimuli. Nevertheless, future work would benefit from including multiple measures of dissociation to understand the differences and similarities between general dissociation and sex-related dissociation. Additionally, the measurement of sexual abuse included experiences that occurred in both childhood and adolescence. Sexual abuse in childhood compared to adolescence may differ because of changes in development and perpetrator types (Kaltman, Krupnick, Stockton, Hooper, & Green, 2005). Thus, this study is best seen as an initial exploration of variables rarely assessed in the literature.

Sample characteristics may also have influenced findings and limit generalizability. CSA severity may be lower in the present community sample than in clinical samples where sex-related dissociation may be more prevalent and reactions to sexual stimuli may differ. Thus, the present findings may not be fully generalizable to a clinical sample. The sample was also mostly Caucasian and the majority of participants had completed at least some college. Future research might consider cultural factors in the experience of sex-related dissociation. Further, results may not apply to women who abstain from alcohol or are problem drinkers. Finally, women with significant distress related to sex who might experience the higher sex-related dissociation may not choose to participate in a study on sexual health.

Conclusion

Women with a CSA history are at particularly high risk for experiencing sex-related dissociation and this research furthers the understanding of the association between alcohol intoxication and sex-related dissociation. This is the second study to find a relationship between CSA history and sex-related dissociation (Hansen et al., 2012). It is also the first to find this association in a community sample using a sexual stimuli exposure paradigm. The present work has implications for interventions. For at least some women with a CSA history, efforts to relax and maximize sexual arousal may attenuate sex-related dissociation.

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Figure 1. Simple slopes plot illustrating the relationship between sex-related dissociation and CSA for Relax and Maximize and No Instruction groups (Instructions). *Asterisk* indicates that slope was significantly different from 0, $p < .05$. Instruction conditions were treated as moderators of the continuous measure of CSA.

Table 1

Means and SDs for CTQ-Sexual Abuse (CSA), Sex-Related Dissociation, and Subjective Sexual Arousal by Experimental Condition

Condition	Alcohol/No Instruct <i>n</i> = 20		Alcohol/Relax and Max <i>n</i> = 17		No Alcohol/No Instruct <i>n</i> = 17		No Alcohol/Relax and Max <i>n</i> = 16	
	<i>M</i>	(<i>SD</i>)	<i>M</i>	(<i>SD</i>)	<i>M</i>	(<i>SD</i>)	<i>M</i>	(<i>SD</i>)
CTQ-Sexual Abuse (CSA)	2.15	(5.04)	2.65	(5.54)	.94	(1.92)	.50	(1.51)
Sex-Related Dissociation	3.00	(1.47)	2.61	(.88)	1.88	(.99)	2.44	(1.38)
Subjective Sexual Arousal	5.08	(1.38)	5.49	(.92)	4.60	(1.50)	4.66	(1.50)

Note. CTQ-Sexual Abuse = Childhood Trauma Questionnaire-Sexual Abuse subscale, scores range from 0-20; Sex-Related Dissociation scores range from 1-7; Subjective Sexual Arousal scores range from 1-7.

Table 2

Multistep Regression Models of Acute Alcohol Intoxication, Instructions to Control Sexual Arousal, and Childhood/Adolescent Sexual Abuse as Predictors of Sex-Related Dissociation

Predictor variables	Model 1 Full Model			Model 2 Final Model		
	β	r^2	R^2	β	r^2	R^2
Step 1		-.008			-.008	
Subjective Sexual Arousal	.076			.076		
Step 2		.026	.076		.026	.076
Subjective Sexual Arousal	.008			.008		
Alcohol condition	.305			.305		
Instruction condition	.052			.052		
CSA severity	.033			.033		
Step 3		.106	.115 [*]		.112	.094 ^{**}
Subjective Sexual Arousal	.002			-.006		
Alcohol condition	.291			.328 [*]		
Instruction condition	.086			.056		
CSA severity	.060			.033		
Alcohol X CSA	-.029					
Instructions X CSA	-.086 [*]			-.096 ^{**}		
Instructions X Alcohol	-.178					
Step 4		.096	.004			
Subjective Sexual Arousal	-.006					
Alcohol condition	.279					
Instruction condition	.153					
CSA severity	.069					
Alcohol X CSA	-.038					
Instructions X CSA	-.057					
Instructions X Alcohol	-.206					
Instructions X Alcohol X CSA	-.035					

Note. CSA = Child Sexual Abuse, Alcohol conditions were coded as 0 = No Alcohol and 1 = Alcohol; Instruction conditions were coded as 0 = No Instructions and 1 = Relax and Maximize.

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