

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

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Abstract

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Experiences that interfere with a woman's ability to be cognitively present during sexual activity such as alcohol use before sex and sex-related dissociation may interfere with her ability to have healthy, communicative, and satisfying sexual experiences. Women's sex-related dissociation, or dissociation during sexual behavior or in the presence of sexual stimuli, may be associated with childhood/adolescent sexual abuse and acute alcohol intoxication. It is not known, however, how efforts to control sexual arousal may impact sex-related dissociation. Therefore, the current study examined relationships among acute alcohol intoxication, instructions to control sexual arousal, and sexual abuse as predictors of sex-related dissociation in 70 women. Participants were randomized to a 2x2 experimental design of alcohol (no alcohol; .10% target peak Breath Alcohol Concentration) and instructions to control sexual arousal (none; "relax and maximize"), watched neutral and erotic films, and projected themselves into a heat-of-the-moment sexual scenario. A main effect of beverage condition showed that the alcohol condition (.10%) compared to the no alcohol condition was associated with greater sex-related dissociation. An interaction was found between sexual abuse and sexual arousal instructions such that sexual abuse and sex-related dissociation were positively associated in the no instruction condition but not significantly associated in the "relax and maximize" sexual arousal instruction condition.

This study suggests that for at least some women with a history of childhood/adolescent sexual abuse (CASA), efforts to relax and maximize sexual arousal may decrease sex-related dissociation.

Background

Women with a history of childhood sexual abuse (CSA) are at heightened risk for problematic sexual health outcomes including sexual re-victimization, sexually transmitted infection-related sexual risk taking, and difficulties with sexual functioning (DiLilio & Long, 1999; for a review, see Hillberg, Hamilton-Giachritsis, & Dixon, 2011; Messman-Moore & Long, 2003; Messman-Moore, Walsh, & DiLillo, 2010; Rellini, Elinson, Janssen, & Meston, 2012). Dissociation is the disintegration of consciousness, memory, identity, and perceptions (American Psychiatric Association, 2000) and can be experienced as disruptions in the perceptions of oneself and the environment (spacing out, feeling as if the world is unreal, and feeling disconnected from one's body). Sex-related dissociation, or dissociation during sexual behavior or in the presence of sexual stimuli, may be a potential mechanism linking CSA history to these sexual problems. Although women with a history of CSA report high rates of dissociation in general, scant attention has been devoted to investigating sex-related dissociation, until recently (Bird, Seehuus, Clifton, & Rellini, 2013; Hansen, Brown, Tsatkin, Zelgowski, & Nightingale, 2012; Sutherland, Fantasia, & Adkison, 2014). Women with a history of CSA also have high rates of alcohol use (Sartor, Agrawal, McCutcheon, Duncan, & Lynskey, 2008) and women with childhood and adolescent sexual abuse (CASA) may use alcohol to achieve intentionally or unintentionally a phenomenological state similar to dissociation (Klanecky, McChargue, & Bruggeman, 2012). Additionally, dissociation is associated with deficits in attentional focus (Amrhein, Hengmith, Maragkos, & Hennig-Fast, 2008; Freyd, Martorello, Alvarado, Hayes, & Christman, 1998), which is important for various aspects of sexuality including the ability to experience heightened sexual arousal (Barlow, 1986). Thus, conditions aimed at intensifying attentional focus – such as provision of an arousal instructional set – may

mitigate dissociation. One way to potentially help women overcome difficulties associated with dissociation and to increase their attentional focus is to instruct them to control their sexual arousal. Therefore, the current study examines the influence of sexual abuse severity, acute alcohol intoxication, and instructions to control sexual arousal on sex-related dissociation.

CASA and Dissociation

The reputed function of dissociation is experiential avoidance, creating distance from the present-moment as individuals escape reminders of traumatic memories and current discomfort (Chu & Dill, 1990; Hayes, Wilson, Gifford, Follette, & Strosahl, 1996; Marx & Sloan, 2005; Putnam & Trickett, 1997; Sanders & Giolas, 1991). Women with a history of CSA report higher levels of dissociation compared to those without a history of CSA (Boysan, Goldsmith, Çavuş, Kayri, & Keskin, 2009; Johnson, Pike, & Chard, 2001; Sanders & Giolas, 1991). Although peritraumatic dissociation (dissociation during a traumatic event) may be adaptive and protective during the trauma, subsequent dissociation may interfere with healthy sexual processes related to consensual intimacy or risk perception (Freyd et al., 1998; Hansen et al., 2012; Marx & Sloan, 2005).

Anecdotally, some women with a history of CSA report feeling triggered by certain types of touch, sexual activities, their own sexual arousal, or discomfort with intimacy; and they can experience dissociation as a result (Haines, 2007; Rothschild, 2000; Sutherland et al., 2014). During these experiences it may be difficult to connect or communicate with a sexual partner if one is mentally “checked out.” We are aware of only three quantitative studies that have directly investigated sex-related dissociation in individuals with a history of CASA. One study found that PTSD, dissociative disorders, rape by an intimate partner, duration of CSA, and number of perpetrators of CSA were positively associated with more sex-related dissociation in a clinical

sample of individuals living with HIV (Hansen et al., 2012). In contrast, another study found no difference in severity of sex-related dissociation between community women with and without CSA (Bird et al., 2013). In a third study, CSA severity in community women was not associated with sex-related dissociation in the laboratory (Stappenbeck, 2014). It is unclear why findings are mixed; perhaps sex-related dissociation is more severe in clinical versus community samples. It is also likely that the relationship between CSA and sex-related dissociation is complex and moderated by both individual and situational factors.

Alcohol and Dissociation

Cross-sectional research has found a relationship between alcohol use and dissociation in the population at large (Seedat, Stein, & Forde, 2003; Tolmunen et al., 2007; Wenzel et al., 1996). Individuals with a history of sexual trauma are at higher risk for alcohol abuse (Sartor et al., 2008), and alcohol use has been correlated with dissociative experiences in survivors of sexual trauma (Klanecky, Harrington, & McChargue, 2008; Klanecky et al., 2012; Roesler & Dafler, 1993). Interestingly, individuals with a history of drug abuse who have higher trauma scores (a composite comprised of different types of traumatic events and their subjective impact as well as number of perpetrators) are more likely to retrospectively report depersonalizing and derealizing experiences during drug and/or alcohol use compared to individuals with a less severe trauma history (Somer & Avni, 2003). Even though research on sex-related dissociation is in its infancy, drinking before sex is common and is associated with sexual outcomes such as higher rates of sexual risk taking and sexual dysfunction (George et al., 2011; Stappenbeck et al., 2013), which may be associated with dissociation.

Much of the research on alcohol and dissociation is on male alcoholics and drug users, is retrospective and correlational, and utilizes a trauma lens, focusing on the use of alcohol to

mimic psychological dissociation (Evren et al., 2011, 2013; Najavits & Walsh, 2012; Schäfer et al., 2007). This particular use of alcohol, that is, to distance from trauma reminders and associated pain has been coined “chemical dissociation” (Somer, Altus, & Ginzburg, 2010). Indeed, both alcohol intoxication and dissociation have been connected to reduced physiological responses to stress (Griffin, Resick, & Mechanic, 1997; Lanius et al., 2002; Schwerdtfeger, Schmukle, & Egloff, 2006; Sher & Grekin, 2007; Vaschillo et al., 2008). Additionally, college students’ desire to dissociate has been shown to mediate the relationship between CASA and problem drinking (Klanecky et al., 2012), supporting the “chemical dissociation” hypothesis. Some work suggests that substance use may be a substitute for when psychological dissociation is not easily experienced (Klanecky et al., 2008; Somer et al., 2010).

A knowledge gap exists on the relationship between acute alcohol intoxication and sex-related dissociative experiences. We are aware of only one study thus far that has experimentally examined the effects of acute alcohol intoxication on experiences of dissociation (Stappenbeck et al., 2014). Acute alcohol intoxication (.10% breath alcohol concentration; BrAC) was associated with greater sex-related dissociation during projection into a written, second person sexual scenario. However, this study did not examine the interaction between sexual abuse history and alcohol intoxication on sex-related dissociation. The role of sexual abuse in how individuals experience dissociation while intoxicated should be examined given that individuals with a history of sexual abuse may drink in order to dissociate (Klanecky et al., 2012; Somer, Altus, & Ginzburg, 2010). Further research is needed to replicate and extend the evidence concerning the causal influence of alcohol intoxication on sex-related dissociation.

Sexual Arousal Control Instructions and Dissociation

Dissociation is characterized by disruptions in attention and consciousness and is

associated with deficits in attention (Amrhein et al., 2008; Freyd et al., 1998). Attention plays a key role in many sexual processes including sexual functioning and decision-making around safe-sex practices (Davis et al., 2010; Nelson & Purdon, 2011). Attentional focus is an important aspect of genital and subjective sexual functioning in women. Allocation of attention to sexual activity and/or one's own body is generally facilitative, whereas distraction from internal and external sexual cues tends to have deleterious effects for sexual problems and sexual dysfunction (Nelson & Purdon, 2011; Silverstein, Brown, Roth, & Britton, 2011). Studies that ask women to voluntarily control (e.g., maximize) their sexual arousal find that participants are capable of doing so and report using purposeful attention shifting to increase both physiological and subjective sexual arousal by focusing on positive sexual thoughts (Adams, Haynes, & Brayer, 1985; Beck & Baldwin, 1994; Cerny, 1978; Laan, Everaerd, Van Aanhoud, & Rebel, 1993). However, women with a history of CSA compared to women without may have less control over their sexual arousal. One experimental study of the relationship between CSA and sexual arousal found an impaired ability to maximize or suppress physiological but not subjective sexual arousal compared to non-abused women (Schacht et al., 2007).

Because dissociation is associated with disruptions in attention and because attention plays a key role in sexual functioning and sexual arousal, control of sexual arousal through attention may influence sex-related dissociation. The act of relaxing in the present-moment and maximizing sexual arousal may influence disruptions in attention created by dissociation and perhaps decrease the dissociation itself. Techniques intended to ground clients and decrease dissociation during sexual activity are sometimes implemented in therapy (Ashton, 1995) and mindfulness-based cognitive-behavioral therapies as well as body-awareness interventions have been created to treat women with sexual dysfunction and distress (Brotto, Basson, & Luria,

2008; Brotto et al., 2008; Brotto, Krychman, & Jacobson, 2008; Brotto, Seal, & Rellini, 2012; Seal & Meston, 2007). However, no actual research that we are aware of has examined the influence of control of sexual arousal on sex-related dissociation.

Current Study

There is a paucity of research aimed at understanding sex-related dissociation and what is known is largely anecdotal and correlational. Therefore, the current study examined sex-related dissociation using an experimental protocol to allow for an examination of the causal processes that occur during an in-the-moment exposure to sexual stimuli. We investigated the roles of three factors that may be associated with women's sex-related dissociation: childhood and adolescent sexual abuse severity (CASA), acute alcohol intoxication, and instructions to control sexual arousal. We compared intoxicated women (.10% BrAC) to sober women and gave either no sexual arousal control instructions or asked participants to relax and maximize their sexual arousal during the presentation of erotic films and a heat-of-the-moment scenario.

Hypotheses

Consistent with previous research (Stappenbeck et al., 2014), we expected that alcohol intoxication would be positively associated with sex-related dissociation (Hypothesis 1). Additionally, given that individuals with a more severe history of trauma report more retrospective experiences of dissociation during drug and/or alcohol use compared to those with a less severe history of trauma (Somer & Avni, 2003), we also predicted that acute alcohol intoxication would moderate the relationship between CASA severity and sex-related dissociation. Specifically, we predicted that the positive relationship would be stronger for those who received alcohol compared to those who received no alcohol (Hypothesis 2). Finally, to the extent that sex-related dissociation is characterized by disruptions in attention to the present-

moment (Amrhein et al., 2008; Freyd et al., 1998) and that attempts to maximize sexual arousal may guide attention to the present-moment (Nelson & Purdon, 2011; Silverstein et al., 2011), it was hypothesized that instructions to control sexual arousal would moderate the relationship between CASA severity and sex-related dissociation. Specifically, we predicted that the positive relationship between CASA and sex-related dissociation would be stronger when participants were not instructed to control their sexual arousal compared to when they were instructed to relax and maximize their sexual arousal (Hypothesis 3).

Method

Participants

Seventy-four community women participated in the current study and 4 were excluded due to missing key variables, leaving 70 women in the final sample. The current sample was taken from a larger study that included additional experimental conditions not pertinent to the present study. Participants were included if they were between the ages of 21 and 35, were interested in dating the opposite sex, were not in a committed relationship, and were moderate drinkers (more than 1 but fewer than 35 drinks per week). Participants were excluded if they reported problem drinking or a history of problem drinking¹ and/or were currently taking medications or having a health condition that contraindicated with alcohol consumption (National Advisory Council on Alcohol Abuse and Alcoholism, 2005). Participants were 70.8% Caucasian, 6.8% Asian/South Asian, 1.9% Native Hawaiian/Pacific Islander, 5.6% Black/African American, 1.2% Native American/American Indian/Alaska Native, and 9.3% multiracial. About half (44.5%) were students and the majority had finished at least some college (85.9%), were employed (65.5%), and were single (86.4%). Participants drank an average of 11.51 ($SD = 9.06$) drinks per week.

Measures

Childhood/Adolescent sexual abuse (CASA). CASA 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. Sample items are “When I was growing up, someone molested me” and “When I was growing up, someone threatened to hurt me or tell lies about me unless I did something sexual with them” (0 = *never true* to 4 = *always true*). Item scores were summed creating a possible range of 0 - 20. The CTQ-Sexual Abuse subscale showed excellent inter-item reliability ($\alpha = .95$).

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 in the laboratory since participants first began watching the films: (1) “Since you started watching the films, have you felt as if you were disconnected from all or part of your body (1 = *not disconnected* to 7 = *very disconnected*)? (2) Since you started watching the films, have things around you seemed unreal? (1 = *not all*, 7 = *very*)? (3) How much have you “spaced out” since you started watching the films (1 = *not spaced out at all*, 7 = *completely spaced out*)?” Item scores were averaged. The items had adequate internal consistency ($\alpha = .77$).

Procedure

Participants were recruited from the community and a large, northwestern university in the United States using flyers, newspaper advertisements, and mailings for a study on “social drinking and decision making.” After a brief standardized phone interview for the assessment of inclusion and exclusion criteria and description of the experimental protocol, eligible participants

were scheduled for the laboratory session. Pre-experimental instructions were to bring a photo identification to verify age, not to drive to the laboratory, 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 before the appointment. Upon arrival, participants gave informed consent and their adherence to pre-experimental instructions was checked by a female experimenter. Participants were also given a pregnancy test if they were in the .10% target peak BrAC alcohol condition and then filled out background questionnaires on a computer located in a private room.

Participants were then randomized to one of two alcohol conditions; no alcohol or .10% target peak BrAC. Participants were weighed to determine the amount of 190-proof grain alcohol needed to achieve a BrAC of .10% (dosage = 1.00 ml alcohol/kg body weight). Alcoholic drinks consisted of one part alcohol to six parts fruit juice. Assessment of BrAC took place every three min until participants reached the target criterion ($\text{BrAC} \geq .06$ for a peak of .10%) in order to ensure that the presentation of the sexual stimuli occurred during the ascending limb of alcohol concentration. In the no alcohol condition, participants were given the same volume of juice as what they would have received in the alcohol conditions. All participants were given drinks using a yoked control design in which participants in the no alcohol group were matched with participants in the alcohol group on the time it took to reach the target BrAC in order to reduce error variance in intoxication levels (Giancola & Zeichner, 1997; Schacht, Stoner, George, & Norris, 2010).

Although physiological sexual arousal was not used in 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 neutral and erotic films. The

plethysmograph resembles a small transparent tampon, is inserted into the vagina by the participant, and uses light to measure genital blood flow (Behavioral Technology, Inc., Salt Lake City). Before the beverage was administered, the experimenter instructed the participant on how to insert the plethysmograph and after the beverage was consumed, instructed the participant to insert the device.

A neutral, 3-min bird documentary (BBC-TV) was shown to establish a baseline sexual arousal reading and then participants were randomly assigned to one of two sexual arousal control instruction conditions. Either no instructions were given or participants were asked to “relax and maximize” their sexual arousal. Instructions were given through headphones and were read by participants on a physical card. Participants were told 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.”

After the instructions were given, participants watched a 3-min erotic film (New Era Productions and VCA Productions) to induce sexual arousal. The content depicted a man and a woman participating in consensual kissing, oral sex, and vaginal intercourse. After viewing the neutral and erotic films, all participants projected themselves into a heat-of-the-moment eroticized scenario written in the second person (using the pronoun, “you”). The assigned alcohol condition matched the alcohol depicted in the story, and participants were asked to imagine that their intoxication or sober experience in the lab was congruent with their experience in the story. The scenario described meeting “Dan” at a party through a mutual friend, “Kathleen.” The couple hit it off right away, talking and laughing for a long time. Dan suggested that they go back to his place and the reader was described as not wanting her time with Dan to end. Eventually they were alone and he leaned in for a kiss. Both characters were described as

feeling excited and the sexual encounter escalated to heavy petting without clothes and both characters were described as being very excited and behavioral indicators such as moaning suggest sexual arousal. Participants rated the scenario as depicting a realistic situation that might happen to them ($M = 4.21$, $SD = 1.215$; 1 = *not at all possible* to 5 = *very possible*) and ratings did not differ between alcohol conditions, $t(69) = -.603$, $p = .570$. Participants were then instructed by intercom to remove the vaginal plethysmograph.

Participants filled out final questionnaires including a measure of sex-related dissociation and were escorted to a separate, private room to wait until BrAC levels fell below .03% (National Advisory Council on Alcohol Abuse and Alcoholism, 2005). Food and water were provided. They were then debriefed, paid \$15/hour, and released.

Data Analytic Plan

Hierarchical linear regression analyses were performed to test the relationships between alcohol intoxication (Alcohol), sexual arousal instruction condition (Instructions), and CASA in association with sex-related dissociation. In the original model, Step 1 included CASA, Alcohol, Instructions. In Step 2, all possible two and three-way interactions were entered. All experimental conditions and possible interactions were included in the original model and the model was trimmed, removing the 3-way interaction and then the least significant 2-way interactions one by one until the final model remained (Aiken & West, 1991).

Results

Means and standard deviations of CASA severity and sex-related dissociation by condition are shown in Table 1. T-tests showed significant mean differences in CASA severity between the Alcohol/No Instructions and No Alcohol/Instructions conditions, $t(35) 1.262 =$, $p < .05$, between the Alcohol/Instructions and No Alcohol/No Instructions conditions, $t(34) 1.271 =$,

$p < .05$, and between the Alcohol/Instructions and No Alcohol/Instructions conditions, $t(32) = 1.497, p < .05$. Additionally, sex-related dissociation was not significantly correlated with women's reported ability to follow the instructions to relax and maximize their sexual arousal, $r = -.157, p = .382$.

In the final model, only the CASA x Instructions interaction remained. Step 1 of the final model (Table 2) was not significantly associated with sex-related dissociation, $F(3,69) = 1.97, p = .127$, but Step 2 was, $F(4,69) = 3.48, p < .05$. Results showed a main effect for Alcohol, $\beta = .26, t(65) = 2.26, p < .05$, and an interaction between CASA and Instructions, $\beta = .696, t(65) = 2.73, p < .01$. Simple slopes analyses (Aiken & West, 1991; see Figure 1) showed that when participants were given no sexual arousal control instructions, CASA was positively associated with sex-related dissociation, $t(69) = 2.337, p < .05$. However, when participants were asked to "relax and maximize" their sexual arousal, CASA and sex-related dissociation were not significantly associated, $t(69) = -1.168, p = .247$.

Discussion

Acute alcohol intoxication was positively associated with sex-related dissociation. However, acute alcohol intoxication did not moderate the relationship between CASA severity and sex-related dissociation. Finally, instructions to control sexual arousal moderated the relationship between CASA severity and sex-related dissociation. Greater CASA severity was associated with more sex-related dissociation when participants were not given any sexual arousal control instructions. However, when participants were instructed to relax and maximize their sexual arousal during the study, CASA severity was not significantly associated with sex-related dissociation. Findings extend previous knowledge about how alcohol and instructions to control sexual arousal may interact with CASA severity in the experience of sex-related

dissociation. Importantly, this is the first study, using experimental manipulation, to show the effects of sexual arousal control instructions on the relationship between CASA severity and sex-related dissociation. Furthermore, moderation effects suggest that the relationship between CASA severity and sex-related dissociation is nuanced and may be dependent on in-the-moment factors.

The current study adds to previous understanding of the relationship between alcohol and dissociation. Findings replicate previous research indicating that acute alcohol intoxication is positively associated with sex-related dissociation (Stappenbeck et al., 2014). However, alcohol's effects were not moderated by CASA, suggesting that women with a more severe history of CASA may not experience more sex-related dissociation while under the influence of alcohol compared to women with no or less severe history of CASA. Importantly, CASA was not evenly distributed across the alcohol administration conditions despite random assignment, tempering confidence in this null finding. Additionally, previous research on the importance of trauma history in experiencing dissociation while intoxicated examined drug and alcohol use in tandem without differentiating between different substances (Somer & Anvi, 2003). It is possible that drugs such as heroin or other opioids as opposed to alcohol account for those effects and are more directly associated with dissociative experiences in that individuals report using opioids specifically for their chemical numbing, derealization, and depersonalization effects (Somer, 2009), which may be stronger than those produced by alcohol.

As hypothesized, instructions to control sexual arousal moderated the relationship between CASA severity and sex-related dissociation (Hypothesis 3). As is shown in Figure 1, CASA severity and sex-related dissociation were positively associated when participants were not given any sexual arousal control instructions and were not associated when participants were

asked to relax and maximize their sexual arousal. This finding suggests that instructing women to control their sexual arousal may attenuate the dissociative response to sexual stimuli in women with more severe histories of CSA. It is possible that maximizing sexual arousal increases attentional focus on the present-moment, which disrupts experiences of sex-related dissociation. Asking women to relax may also decrease sex-related dissociation to the extent that dissociation is experienced in response to discomfort and distress; whether the findings are due to efforts to maximize arousal, relaxation, or both, is unclear. This is the second study to find a relationship between CSA history and sex-related dissociation using a continuous measurement of CSA (Hansen et al., 2012) and the first to find the association in a community sample of non-treatment-seeking women and using a paradigm involving exposure to sexual stimuli (Stappenbeck, 2014).

Clinical Implications

To the extent that sex-related dissociation is characterized by disruptions in perceptions of oneself and the environment (spacing out, feeling as if the world is unreal, and feeling disconnected from one's body), it is important to understand the effects these experiences may have on sexual health and satisfaction. For example, distraction from or failure to attend fully and positively to the sexual activity can cause problems with sexual arousal functioning (Barlow, 1986; Koukounas & Over, 1999, 2001; Kuffel & Heiman, 2006; Nelson & Purdon, 2011). Although there has been no empirical work aimed specifically at alleviating sex-related dissociation, research supports the effectiveness of mindfulness and body-awareness techniques on increasing sexual functioning in women with and without a history of CSA (Brotto, Basson, & Luria, 2008; Brotto et al., 2008; Brotto, Krychman, & Jacobson, 2008; Brotto, Seal, & Rellini, 2012; Seal & Meston, 2007). Asking women to relax and maximize sexual arousal may have

similar effects of increasing body awareness and more research in this area would elucidate useful interventions for sex-related dissociation. It is important to note that in women for whom attention to bodily sensations actually triggers dissociation (Rothschild, 2000), present-moment awareness without appropriate support and gradual exposure, might be detrimental. For women who present with sexual functioning difficulties, low sexual satisfaction, or communication difficulties during sexual activity, clinicians may want to probe for alcohol intoxication during sexual activity and its dissociative effects, which may interfere with present-moment awareness. Either decreasing alcohol use before sexual activity or teaching skills to prepare for alcohol-induced dissociation may improve the sexual health of clients.

Limitations, Strengths, and Future Directions

Some limitations related to measurement constrain our interpretation of the analyses. Although the measure of sex-related dissociation has good face validity and adequate inter-item reliability ($\alpha = .77$), the measure does not assess the broad range of dissociative experiences. However, the items used (spacing out, feeling like the world is unreal, and feeling disconnected from all or part of one's body) are found in commonly used measures of dissociation and capture typical descriptions of depersonalization and derealization (Bernstein & Putnam, 1986; Briere et al., 2005). In addition, dissociation was not measured before the presentation of the sexual stimuli. We acknowledge the possibility that the dissociative experiences measured in the laboratory are not due to the sexual stimuli per se but are related to general dissociation. However, whether the dissociation experienced was a function of general dissociation or was triggered by the sexual nature of the experiment, more dissociative experiences indeed occurred during the erotic films and heat-of-the-moment scenario in association with more severe CASA history, supporting evidence that women with a more severe history of CASA experience

dissociation during sexual activity (Hansen et al., 2012). Future work would benefit from including multiple measures of dissociation to understand the differences and similarities between general dissociation and dissociation during sexual activity (Bird et al., 2013) in order to examine the origins of sex-related dissociation. Additionally, the measurement of sexual abuse included experiences that occurred in both childhood and adolescence. Abuse that occurred in childhood compared to adolescence may be characteristically different as a factor of changes in development. However, because this study examines relationships rarely assessed in the literature, it is still an appropriate addition to extant work. Future research should examine abuse that occurred in childhood and adolescence separately as well as together to test whether the relationships between sex-related dissociation, alcohol, and arousal control instructions differ with age of abuse.

Sample characteristics may also have influenced findings and limit generalizability. CASA severity for example may be lower in the present sample than in clinical samples where sex-related dissociation may be more prevalent and reactions to sexual stimuli may be different. Indeed, the highest average CASA severity summation score for any given experimental condition was 2.65 ($SD = 5.54$) out of a maximum possible score of 20. Research on clinical samples using the Childhood Trauma Questionnaire-sexual abuse subscale has found mean scores of 6.30 ($SD = 1.94$) for participants diagnosed with major depressive disorder and 7.68 ($SD = 3.82$) for participants diagnosed with bipolar disorder (Perna, Vanni, Di Chiaro, Cavedini, & Caldirola, 2014). Additionally, future work should seek to replicate the current findings given that the sample size is small and the number of women per experimental cell with a history of CASA is likely not large. The present sample is also mostly Caucasian and the majority of participants have completed at least some college education. Future research might consider

cultural factors in the experience of sex-related dissociation and associations with CASA, alcohol intoxication, and instructions to control sexual arousal in that the subjective experience of dissociation might be interpreted and reported differently depending on ethnic or cultural background and education level. The study is also limited in that it is lab-based. Participants, however, did report that the in-the-moment eroticized scenario was realistic on a scale from 1 = *not at all possible* to 5 = *very possible* ($M = 4.21, SD = 1.215$) and found the erotic films sexually arousing on a scale from 1 = *not arousing at all* to 5 = *very arousing* ($M = 3.76, SD = 1.083$). Finally, the experimental protocol imitated a positively valenced sexual experience making any generalizations to situations reminiscent of previous abuse, or threatening, nonconsensual, or painful sexual encounters, tentative. While some sexual implications associated with sex-related dissociation may occur during dangerous and threatening situations, such as revictimization, other possible consequences such as sexual functioning difficulties, may occur when women are in no real danger. Indeed, women with a history of CASA may experience sex-related dissociation during consensual sexual activity (Haines, 2007; Hansen et al., 2012; Rothschild, 2000), suggesting that the current study, although not created to be threatening in nature, may be directly applicable to some sexual situations in which sex-related dissociation occurs.

Conclusion

Experiences that interfere with a woman's ability to be cognitively present during sexual activity, such as alcohol use before sex and sex-related dissociation, may interfere with her ability to have healthy, communicative, and satisfying sexual experiences. Women with a history of CASA are at particularly high risk for experiencing dissociation related to sex and this research adds to the current empirical understanding of potential barriers to present-moment

awareness. Importantly, for at least some women with a history of CASA, efforts to relax and maximize sexual arousal may decrease sex-related dissociation.

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Footnote

¹ Potential 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.

Table 1

Means and SDs for CTQ-Sexual Abuse (CASA) and Sex-Related Dissociation by Experimental Condition

Condition	Alcohol	Alcohol	No Alcohol	No Alcohol
	/No Instruct <i>N</i> = 20	/Relax and Max <i>N</i> = 17	/No Instruct <i>N</i> = 17	/Relax and Max <i>N</i> = 16
	<i>M (SD)</i>	<i>M (SD)</i>	<i>M (SD)</i>	<i>M (SD)</i>
CTQ-Sexual Abuse (CASA)	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)

Note. CTQ-Sexual Abuse = Childhood Trauma Questionnaire-Sexual Abuse subscale

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

Model	Step and Predictor variables	β	r^2	ΔR^2
Original				
	Step 1		.082	
	Alcohol	.245*		
	Instructions	-.022		
	CASA	.106		
	Step 2		.201	.118
	Alcohol	.033		
	Instructions	-.249		
	CASA	.253		
	Alcohol X CASA	-.725		
	Instructions X CASA	.075		
	Instructions X Alcohol	.292		
	Instructions X Alcohol X CASA	.576		
Final				
	Step 1		.082	
	Alcohol	.245*		
	Instructions	-.022		
	CASA	.106		
	Step 2		.151*	.069*

Alcohol	.248*
Instructions	-.138
CASA	-.307
Instructions X CASA	.502*

Note. CASA = Child/Adolescent Sexual Abuse, Instructions = Sexual arousal control instruction condition, Alcohol = Acute alcohol intoxication conditions; Alcohol conditions were coded as No Alcohol = 0 and Alcohol = 2; Instruction conditions were coded as Relax and Maximize = 1 and No Instructions = 3.

* = $p < .05$

Figure 1. Simple slopes plot illustrating the relationship between sex-related dissociation and CASA 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 CASA.

