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Abstract

Using a sample of 1117 female, college students, this study examined emotional, behavioral, and social-cognitive mechanisms of sexual abuse revictimization. It was hypothesized that numbing, alexithymia, alcohol problems, mistrust, and adult attachment dimensions would mediate the relationship between childhood sexual abuse (CSA) and adult sexual abuse (ASA). Aside from the Close Adult Attachment dimension, the results indicated that all of the hypothesized mediators were associated with CSA. However, only alcohol problems and mistrust met the necessary conditions of mediation. The results with respect to mistrust are especially unique in that it is one of the first empirical demonstrations of a social-cognitive mechanism for sexual abuse revictimization. Thus, these results enhance our understanding of interpersonal mediators of the relationship between CSA and ASA and provide a new direction for future research.

Keywords: Sexual abuse revictimization, trauma symptoms, alcohol problems, attachment style, trust

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It has been empirically well established that women who have experienced childhood sexual abuse (CSA) are at increased risk for sexual abuse in adulthood (e.g., Arata, 2002; Filipas & Ullman, 2006; Messman & Long, 1996). This increase in risk has been found to range from two (Gidycz, Coble, Latham, & Layman, 1993) to over five times the risk in comparison to women with no such experiences (Kimerling, Alvarez, Paval, Kaminski, & Baumrind, 2007). Various factors have been found to moderate the increase, such as severity of victimization, duration of the abuse, and use of physical force (Beitchman, Zucker, Hood, DaCosts, Akman, & Cassavia, 1992); however, more research is needed to clearly delineate the mechanisms behind the relation between CSA and adult sexual assault (ASA) (Arata, 2002; Classen, Palesh, & Aggarwal, 2005; Roodman & Clum, 2001).

Several psychological, behavioral, and interpersonal difficulties have been found to be associated with both CSA and ASA (Filipas, & Ullman, 2006; Messman-Moore & Long, 2002; Muller, Sicoli, & Lemieux, 2000), and thus have been hypothesized to be possible mechanisms of sexual abuse revictimization. Only a small number of studies have examined the meditational role of psychological or behavioral factors, focusing predominantly on substance abuse and PTSD symptoms, in the relation between CSA and ASA (Arata, 2000; Messman-Moore, Ward, & Brown, 2009; Risser, Hetzel-Riggin, Thomsen, & McCanne, 2006; Sandberg, Matorin, & Lynn, 1999; Testa, Hoffman, & Livingston, 2010). Many of these studies either fail to distinguish between different types of avoidant responses (Arata, 2000; Messman-Moore et al., 2009; Risser et al., 2006; Sandberg et al., 1999) or have examined substance use rather than

substance abuse (Messman-Moore et al., 2009; Testa et al., 2010). Additionally, to our knowledge no studies have specifically examined the potential meditational role of social-cognitive factors. The current study examined emotional, behavioral, and social-cognitive responses to trauma as possible mediators of the relationship between CSA and ASA.

PTSD Symptoms and Associated Characteristics

PTSD is a disorder indicated by three symptom groups: re-experiencing of the traumatic event, avoidance of trauma related stimuli, and persistent hyperarousal (American Psychological Association, 2000). Because many CSA victims develop PTSD symptoms in response to their trauma, researchers have questioned the role PTSD symptoms may play in the relation between CSA and ASA. One prominent theory is that PTSD symptoms interfere with aspects of psychological functioning which places CSA victims at higher risk of future victimization (Chu, 1992; Cloitre, 1998). Some aspects of the trauma sequelae such as numbing and alexithymia, can be seen as methods for coping with the abuse that has been experienced. For example, an individual may attempt to suppress her possible feelings of fear or anxiety in response to situations that stimulate memories of the sexual abuse suffered as a child. However, these same responses may, unfortunately, place sexual abuse survivors at greater risk for further victimization. That is, this avoidance of anxious feelings may result in a failure to identify "risky" persons and situations because this person is not experiencing the fear that would typically serve as a cue to warn her of imminent danger (Cloitre, 1998). Thus, PTSD symptoms and associated characteristics such as alexithymia or numbing, may play a significant role in the increased risk for ASA.

Although a number of studies have examined PTSD symptoms or associated characteristics as predictors of revictimization (e.g., Cloitre et al., 1997; Filipas & Ullman,

2006), relatively fewer studies have explored the question of whether PTSD symptoms actually mediate the relationship between CSA and ASA. Using a prospective design, Sandberg, Matorin, and Lin (1999) explored the role of PTSD symptoms, particularly dissociation, in predicting later revictimization. They did not find evidence that PTSD symptoms mediated the relation between CSA and ASA; however, the severity of PTSD symptoms did moderate the relation.

More recent studies have found support for the meditational role of PTSD symptoms using global measures of PTSD (Arata, 2000; Messman-Moore et al., 2009). However, greater theoretical and empirical specification is needed of how the three different groups of PTSD symptoms translate into further victimization. Both Chu's (1992) and Cloitre's (1998) work suggests that the avoidant symptoms of PTSD might be particularly important because of the resultant suppression of emotional cues of imminent danger needed to keep one safe. However, the above mentioned studies on PTSD as a mediator did not isolate the specific aspects of avoidance that would be expected to be directly involved in this process (i.e., numbing and alexithymia) (Arata, 2000; Messman-Moore et al., 2009; Sandberg et al., 1999). According to the DSM-IV TR, the criteria for avoidant symptoms of PTSD embody emotional restriction (e.g., "restricted range of affect"), but are more broad in that they also include avoidance of external stimuli and memories (e.g., "efforts to avoid activities, places, or people that arouse recollections of the trauma," and "inability to recall an important aspect of the trauma") (American Psychiatric Association, 2000). The failure of Sandberg et al. (1999) to find evidence for avoidance symptoms of PTSD as mediators of sexual abuse revictimization might have been due to the fact that their measure included a variety of avoidant symptoms, some of which may be unrelated to ASA or even related to ASA in the opposite direction. The current study is unique in that the

aspects of avoidance that are especially pertinent to Chu's and Cloitre's theoretical models (i.e., numbing and alexithymia) were assessed directly.

Other PTSD symptoms may serve as mechanisms for revictimization. For instance, Risser et al. (2006) found only hyperarousal significantly mediated the relationship between CSA and adult revictimization. Although this result is not consistent with Chu's (1992) and Cloitre's (1998) theoretical conceptualizations, it does fit with theories evoked to explain the increased substance use often seen in this population. These findings are also consistent with Orcutt, Erikson, and Wolfe's (2002) argument that women with histories of CSA may experience an *increased* awareness of danger cues in one's environment, but may not be able to differentiate low versus high levels of threat. Thus, while the woman is experiencing cues of danger, these cues do not provide the level of specificity to be useful to her in making decisions about whether to avoid risky people or places. This concept will be discussed in greater detail with respect to the potential role of mistrust as a mechanism for sexual abuse revictimization.

Drinking Problems

Individuals with a history of childhood sexual abuse are at an increased risk for alcohol dependence (Sartor et al., 2007), and women who have been revictimized as adults endorse even greater substance use (Filipas & Ullman, 2006). One theory regarding the increase of these disorders in sexual abuse populations is that substance use may be a maladaptive strategy for coping with PTSD symptoms; substance use helps to avoid the images, thoughts, and distress associated with PTSD. However, the behavioral and social consequences of substance use such as risky sexual behavior (Derman, Cooper, & Agocha, 1998) and more deviant social networks (Grauerholz, 2000) may increase the risk for ASA. The idea that substance abuse is a strategy used to cope with the intense negative affect created by the CSA incident fits with Risser et al.'s

(2006) research suggesting that the PTSD symptom of hyperarousal, in particular, serves as a mediator of the relationship between CSA and ASA. Moreover, using a mixed retrospective and prospective design, Messman-Moore et al. (2009) not only found that PTSD and substance use mediated the relationship between CSA and ASA, but that substance use mediated the relationship between this PTSD symptoms and ASA. Taken together, the results of these two studies are consistent with a self-medication model of PTSD and substance use.

While recent evidence is beginning to accumulate that substance use may serve as a mechanism for revictimization (Messman-Moore et al., 2009; Testa et al., 2010), these studies have focused on substance use (i.e., frequency and/or quantity) rather than the problems associated with alcohol abuse, in the form of alcohol abuse. Certainly, heavy and frequent alcohol consumption is closely related to alcohol abuse (Courtney & Polich, 2009). However, one might expect alcohol abuse to have a broader more enduring impact on the social behavior of female victims of CSA. For instance, in Grauerholz's (2000) ecological model of sexual abuse revictimization, when discussing aspects of immediate context in which the revictimization occurs (i.e., the microsystem level), she emphasizes factors that increase a woman's "exposure risk" as well as factors that increase the risk of a perpetrator acting aggressively. Examples of the former include associating with dangerous people and frequenting unsafe places, and examples of the latter include the potential victim's lack of social support from family and friends and her decreased ability to respond to unwanted advances. As heavy alcohol use transitions into abuse, one might expect many of these problems to become amplified.

Social-Cognitive Responses to Trauma

Research has shown that women who have experienced CSA have significant interpersonal difficulties (Cloitre, Scarvalone, & Difede, 1997). Additionally, interpersonal

competence as indicated by perceived friend support has been shown to buffer women who have experienced CSA from psychological difficulties as adults (Powers, Ressler, & Bradley, 2009). Grauerholz's (2000) discussion of extosystem factors highlights the role of social networks for women with CSA and subsequent ASA. She points out that women who have experienced CSA appear to have fewer social alternatives and are less likely to seek support from friends and family. This lack of social support may then remove buffers that could reduce the risk of ASA. To our knowledge, no studies have examined the social-cognitive responses of CSA survivors, in conjunction with PTSD symptoms and substance use, as a mechanism for revictimization. Two aspects of social-cognition this study will investigate as partially explaining the link between CSA and ASA are chronic mistrust of others and adult attachment.

Mistrust. Trust is a social-cognitive factor which could potentially be influenced by the experience of CSA and would strongly impact one's ability to develop a supportive social network. However, the literature examining the role of trust in revictimization is limited. As would be expected, individuals who experience CSA often report a decline in their ability to trust others (Bernath, 1997). Further, trust has been found to mediate the relation between CSA and adult psychological adjustment (Hartman, 1998) but has not been examined for its potential role in revictimization. It may be that trust is a cognitive manifestation of the hyperarousal examined by Risser et al. (2006), although the specific traumatic stressor has ceased, the anxious arousal is still active and generalized to many situations. Similarly, individuals who have experienced CSA may have developed a similar response with regard to social cognitions. Levels of trust would be lower because there is an anticipation of or readiness for harm from others. However, if this lack of trust is over applied to virtually all people in their social network, the heuristic of trust is no longer useful; an individual who has experienced CSA may fail to identify "risky" persons and

situations and increase her risk of revictimization, similar to the proposed role of emotional avoidance symptoms of PTSD.

Adult attachment dimensions. Studies examining the relation between adult attachments and CSA have generally found that the experience of CSA is related to more insecure attachment styles (e.g., Muller, Sicoli, Lemieux, 2000; Owen, 2001). Additionally, Muller et al. (2000) examined the relation of attachment style and PTSD symptoms in a sample of adults with a history of CSA. As expected, a greater proportion of their sample endorsed insecure attachment style than would be expected in a community sample. Additionally, those who endorsed fearful and preoccupied attachment styles also endorsed greater PTSD symptom scores. Although attachment style has been found to be related to both CSA and PTSD symptoms, the potential role of attachment styles, particularly insecure attachment styles, in the risk for revictimization has not been examined.

Collins and Read's (1990) proposed examining individuals on three dimensions of attachment. These three dimensions, which are strongly related to interpersonal functioning, are an individual's comfort with interpersonal closeness, the feeling that he or she can depend on others, and anxiety regarding abandonment. Similar to the trust issues discussed above, if one is uncomfortable with interpersonal closeness and thus, keeps interpersonal relationships at a more superficial level, she would have fewer social alternative and would be less likely to seek social support. Likewise, if one universally views others as unreliable and unsupportive, others' actual standing on these variables would not serve as useful heuristics for distinguishing between safe and unsafe persons. Lastly, anxiety regarding abandonment may increase the likelihood that "warning signs" of risky people or situations are discounted or disregarded; relief of the immediate anxiety regarding abandonment may over-ride anxiety over a *potentially* bad

situation. Given the apparent relation of these dimensions to the other social-cognitive constructs proposed in the current study, we utilized Collins and Read's model as an index of adult attachment.

The current study examined both emotional and social-cognitive responses to trauma as possible mediators of the relationship between CSA and ASA. Based on Baron and Kenny's (1986) four criteria of mediation, the following hypotheses were offered:

Hy1: There would be a significant relationship between CSA and ASA.

Hy2: There would be a significant relationship between CSA and the hypothesized mediator variables (i.e., alexithymia, adult attachment dimensions, drinking problems, mistrust, and numbing).

Hy3: When CSA was statistically controlled, there would still be a significant relationship between the hypothesized mediator variables and ASA.

Hy4: Assuming full mediation was present, when the hypothesized mediator variables were statistically controlled, there would no longer be a significant relationship between the CSA and ASA.

Method

Participants

Participants were recruited from introductory psychology courses at a private, Midwestern university by placing a description of the study on a research website that is available to all students in the course. This Psychology Department website describes all research opportunities that are available for the students for course credit. Interested students signed up through the website for a designated time slot. Approximately 2053 female students took this course during the data collection period. Of them, 1117 female participants (M = 19

years old; *SD* = 2.30) signed up for and completed the study. Of this sample, 93% were Caucasian, 4% were African American, and 3% were of other racial backgrounds. In terms of experiences with CSA, 855 participants did not endorse any of the 120 items that directly assessed CSA, whereas 262 endorsed at least one of these items. Likewise, on the ASA measure, 1006 participants did not endorse any of the four items that directly assessed rape, whereas 111 participants endorsed at least one of these items. An examination of the combination participant's scores on the CSA and ASA measures indicated that 793 participants did not report any victimization, 213 reported CSA, but not ASA, 62 reported ASA, but not CSA, and 49 reported both CSA and ASA.

Measures

Childhood sexual abuse. A modified version of the Childhood Sexual Experiences Scale developed by Finkelhor (1979) was used to identify participants who have experienced childhood sexual abuse, the frequency and duration of the abuse, and the perpetrator of the abuse. Participants were given a table which listed a variety of sexual experiences which increased in intrusiveness (e.g., invitation or request to do something sexual, fondling, intercourse). They were asked to indicate which of these situations they had experienced and which of the individuals described (e.g., stranger, cousin, father) on the table perpetrated the behaviors. The primary modification made to this variable, was that the list of possible individuals to commit the perpetration was expanded to include parents, stepparents, and boyfriends or girlfriends of the parents. The table was completed twice, once for experiences prior to age 12 and again for experiences which occurred without the participant's consent between ages 12 and 16. For the purpose of the primary study analysis, responses to both tables were tallied and combined beginning with items pertaining to fondling and spanning to

penetration.[1] Thus, in the primary analyses, childhood sexual abuse was a continuous variable that represented the number of acts ranging from fondling to penetration experienced by the participant before the age of 16. In addition to the experience table, respondents were asked to indicate the frequency and duration of the abuse and whether force or threat was involved. They were also asked whether they informed anyone of the abuse. If parents were informed, questions regarding the nature of parental responses were provided.

Sexual victimization as an adult. The Sexual Experiences Scale developed by Finkelhor (1979) was used to identify participants who have been sexually assaulted as adults. The scale consists of thirteen true-false items, each describing a different sexual situation. The items begin by describing consensual sexual experiences and ask about increasingly nonconsensual and coercive sexual experiences. A composite of the last four items was used as our index of rape during adulthood. Thus, for the primary analyses, adult sexual abuse was treated as a continuous variable that represented the number of these four items endorsed by the participant. A list of these four items can be found in Appendix A. Cronbach's alpha for these items was .79.

Drinking Problems. Problematic drinking was assessed using a subscale of the Core Alcohol and Drug Survey that measures consequences of drinking alcohol (Presley, Meilman, & Lyerla, 1992). This survey was developed through a grant from the U.S. Department of Education to assess alcohol and drug use nation-wide among college students. The CORE is a widely used measure with numerous empirical demonstrations of its reliability and validity (Midanik, 1988; Thompson, Leinfelt, & Smyth, 2006). The Consequences subscale is an 18-item self-report measure that is rated on a Likert scale that ranges from 1 ("never") to 6 ("10 or more times"). Each item describes a negative situation that results from problematic drinking (e.g., "had a hangover," "missed a class," "been hurt or injured"). Possible values for this subscale

ranged from 18 to 108. In the present study, the Cronbach's alpha for this subscale was .88.

Alexithymia. The Toronto Alexithymia Scale (Bagby, Parker, & Taylor, 1994), a twenty-item, self-report questionnaire, was used in this study to measure alexithymia. An example of an item from this measure is "It is difficult for me to find the right words to describe my feelings." Total scores range from 20 to 100, and for the primary study analyses, the total score was used. The Cronbach's alpha for this measure in the current study was .83.

Numbing. The 35-item Glover Numbing Scale is a self-report questionnaire which measures the frequency of a variety of behaviors experienced by individuals with difficulties accessing feelings other than hostility and rage (Glover, Ohlde, Silver, Packard, Goodnick, & Hamlin, 1994) and was used to assess numbing in the current study. Items were rated on a seven-point Likert scale and ranged from 1 (never) to 7 (always) with a total possible score from 35 to 245. A sample item from this measure is "I feel dead or shut down." Cronbach's alpha for this scale was .91.

Attachment style. The 18-item Adult Attachment Scale (Collins & Read, 1990) was used to assess participants' standing on three attachment dimensions believed to underlie adult attachment style. Participants rated items tapping the following attachment dimensions on a five-point scale: is comfortable with closeness (Close: e.g., "I find it relatively easy to get close to others"), believes others can be depended upon (Depend: e.g., "I know that others will be there when I need them"), and experiences anxiety surrounding being unloved or abandoned (Anxiety: e.g., "I want to merge completely with another person"). The Cronbach's alphas in the current study were .77 (Close), .82 (Depend), and .79 (Anxiety).

Mistrust. The 8-item Doubt About Trustworthiness of People Scale (Scheussler, 1982) was administered to assess interpersonal trustParticipants rated each item on a five-point Likert-

type scale from “strongly disagree” to “strongly agree.” A sample item is “Most people are fair in their dealings with others.” Total possible scores range from 8 to 40, and Cronbach’s alpha for this measure was .82.

Procedures

Respondents completed a packet of questionnaires which included measures of the following constructs: childhood sexual abuse, sexual victimization as an adult, drinking problems, alexithymia, numbing, attachment style, and mistrust. The questionnaires were counterbalanced using a random starting order with rotation (e.g., CBA, BAC, ACB) procedure. Upon completing the packets, participants were thanked and debriefed regarding the purpose of the study.

Results

Preliminary Analyses

The means, standard deviations, and ranges of the continuous variables can be found in Table 1. Preliminary analyses were conducted in order to examine the relationship between demographic variables (age and race) and the dependent variable, ASA. Analysis of Variance (ANOVA) was conducted between race and ASA, while a Pearson correlation was conducted between age and ASA. The results of the ANOVA with race as the grouping variable and ASA as the dependent variable was not significant, $F(3, 1105) = 2.28$, $p > .05$, suggesting that there were not racial differences in ASA. The results revealed a significant positive correlation between age and ASA, such that older participants were more likely to have been victims of ASA than younger participants ($r = .11$, $p < .01$). Therefore, age will be controlled for in the analyses testing for mediators of the relationship between CSA and ASA.

Insert Table 1 about here

Primary Analyses

Test for variables that mediate the relationship between CSA and ASA. Using Baron and Kenny's (1986) four criteria for mediation, analyses were also performed to determine whether alexithymia, dimensions of adult attachment style, drinking problems, mistrust, and numbing mediated the relationship between CSA and ASA. Baron and Kenny (1986) argued that to show evidence for mediation the following conditions must be met: (1) there must be a significant relationship between the predictor and criterion variables, (2) there must be a significant relationship between the predictor and mediator variables, (3) when the predictor variable is statistically controlled, there is still be a significant relationship between the mediator and criterion variable, and (4) assuming full mediation exists, when the mediator variable is statistically controlled, there is no longer a significant relationship between the predictor and criterion variables. It should be noted that it is possible for mediation to exist without the fourth condition being met, but in such a case, partial rather than full mediation would be indicated. In these analyses, the scores on the CSA and ASA measures before they were dichotomized were used in order to perform regression analyses. Because of the large number of analyses conducted to test our meditational hypotheses, a Bonferroni correction was used. Specifically, a probability value of .05 was divided by the number of indirect effects that will be tested in our meditational model (seven). This resulted in a value of .007, which will be used as the standard for statistical significance in the meditational analyses (i.e., Hypotheses 1 through 4).

Hypothesis 1-There would be a significant relationship between CSA and ASA. To test the first hypothesis, a hierarchical multiple regression was conducted with ASA as the criterion

variable. Age was entered on the first step and CSA was entered on the second step. Table 2 depicts the results of this analysis. As one can see, support was obtained for Hypothesis 1, as the results indicated a significant positive association between CSA and ASA. Participants who experienced CSA were also more likely to experience ASA. This result represents the direct effect of the CSA and ASA, and is also depicted in parentheses in Figure 1.

Insert Table 2 and Figure 1 about here

Hypothesis 2-There would be a significant relationship between CSA and the hypothesized mediator variables (i.e., alexithymia, adult attachment dimensions, drinking problems, mistrust, and numbing). In order to test the second criterion of mediation, Baron and Kenny (1986) suggested calculating multiple regression equations using the hypothesized mediators as the criterion variables and the X variable as the predictor. Therefore, a series of hierarchical multiple regressions were calculated separately with each of the hypothesized mediators (i.e., alexithymia, adult attachment dimensions, drinking problems, mistrust, and numbing) as the criterion variables, age entered in the first step,[2] and CSA entered in the second step. The results of these analyses are summarized in Figure 1. As one can see, CSA was a significant predictor of all of the hypothesized mediators except the Close attachment dimension. Thus, support for Hypothesis 2 was obtained for six of the seven hypothesized mediators. Participants who experienced CSA were more likely to score higher on measures of alexithymia, the anxiety attachment dimension, drinking problems, mistrust, and numbing. Conversely, participants who experienced CSA were more likely to score lower on the Depend attachment dimension.

Hypothesis 3 and 4-When CSA was statistically controlled, there would still be a significant relationship between the hypothesized mediator variables and ASA (Hy3). Assuming full mediation was present, when the hypothesized mediator variables were statistically controlled, there would no longer be a significant relationship between the CSA and ASA (Hy4). In order to test the third and fourth conditions of mediation, a final hierarchical multiple regression analysis was conducted. Adult sexual abuse was the criterion variable, age was entered into the first step, and CSA and the hypothesized mediators were entered into the second step. Table 3 and Figure 1 depict the results of these analyses. Drinking problems and mistrust, but not the other five hypothesized mediators, met the third condition of mediation. Also seen in Table 3 and Figure 1 is that the association between CSA and ASA remained significant even when the effects of the hypothesized mediators were statistically controlled. Taken together, the results of the series of regression equations suggest that drinking problems and mistrust serve as partial, but not full mediators of the association between CSA and ASA.

Insert Table 3 about here

Although support of Baron and Kenny's first three assumptions of mediation suggests the possible presence of mediation, these steps do not provide a quantitative test of the significance of the indirect effects of the predictor through the mediator/s (MacKinnon, Warsi, & Dwyer, 1995). Thus, the Sobel test, a frequently used method to quantify indirect effects meditational models, was calculated. The Sobel test was calculated to test the indirect of effects of CSA through drinking problems and mistrust since those were the two variables that met Baron and Kenny's conditions of mediation. The results confirmed significant indirect effects of CSA in the

predictions of ASA through mistrust ($t = 3.39$, $p < .006$) and drinking problems ($t = 12.87$, $p < .006$). Thus, drinking problems and mistrust appear to mediate the relationship between CSA and ASA.

Discussion

In the current study, we sought to validate previous theoretically and empirically identified mechanisms for sexual abuse revictimization that involve psychological symptoms of PTSD and associated characteristics such as numbing and alexithymia, or maladaptive coping behaviors such as alcohol problems (Chu, 1992; Cloitre, 1998; Gauerholz, 2000). This study also attempted to build upon the work of Cloitre et al. (2002) in further exploring possible social-cognitive mechanisms, as well. While a number of factors were investigated, two in particular were found to serve as mediators of the relation between CSA and ASA, trust and drinking problems. Contrary to expectations and the results of previous research (Arata, 2000; Messman-Moore et al., 2009; Risser et al., 2006), we did not find that PTSD symptoms and associated characteristics served as mediators of the relationship between CSA and ASA.

Mediators of the Relationship between CSA and ASA

Drinking problems. Although the theoretical importance of substance abuse in understanding sexual abuse re-victimization has been emphasized (Chu, 1992; Cloitre, 1998; Grauerholz, 2000), few studies have directly investigated substance abuse a mediator variable. Some studies have found that alcohol use or abuse is a risk factor for adult victimization (Greene & Navarro, 1998; Messman-Moore & Long, 2002), but did not test for mediator effects. Merrill et al. (1999) did test for such effects but failed to find support for alcohol problems as a mediator. Two more recent studies, both using prospective designs, found evidence that substance use mediated the relationship between CSA (Messman-Moore et al., 2009) or

adolescent sexual abuse (Testa et al., 2010) and ASA. Our findings are unique in that they are the first, to our knowledge, that empirically identify drinking problems rather than drinking frequency or amount a mechanism for revictimization. Messman-Moore et al. (2009) and Testa et al. (2010) examined frequency or amount. While Merrill et al. (1999) did investigate drinking problems, they did not find support for mediation in their sample.

Several explanations have been offered for why alcohol may account for the link between CSA and ASA. Previous theorists have emphasized impairments in the recognition of danger cues in one's environment, the incapacitating effects of heavy alcohol consumption, and being perceived by perpetrators as easier targets for victimization or more receptive to sexual advancements (Chu, 1992; Cloitre, 1998; Gauerholz, 2000; Messman-Moore et al., 2009; Testa et al., 2010). Experiencing symptoms of alcohol abuse as opposed to drinking frequently and intensely may not pose qualitatively different risks, it may be a matter of degree. Women who demonstrate symptoms of alcohol abuse may be even less attentive to cues of danger in the environment because their desire to drink overrides their motivation to attend and respond to these cues. Related, these women may be even more likely to be viewed by perpetrators as easy targets of potential victimization. This might especially be the case if the woman's substance abuse problems have begun to negatively impact the quality of her social network. Specifically, if otherwise close, reliable friends become disenchanted with a woman's problematic drinking behaviors, they may not be consistently available when she is drinking to aide her in avoiding risky people and places. Hence, whether alcohol abuse and social support negatively interact to produce victimization would be a fruitful area of future research.

Our results reiterate the importance of concurrent assessment and, if warranted, treatment of alcohol abuse with women with histories of CSA. As pointed out by Messman-Moore et al.

(2009), assuming that the motivation for alcohol consumption is to reduce emotional tension stemming from the trauma history, such alcohol expectancies would need to be addressed in therapy, and other skills for coping with trauma-related negative affect discussed. Further, as reflected in Grauerholz' ecological theory of revictimization, the larger ecological context in which the victimization occurs needs to be addressed. That is, presumably a woman's victimization risk is increased by drinking in social contexts in which others are intoxicated and sexual encounters are normative (i.e., parties, bars, etc.). Thus, prevention and intervention efforts should focus on strategies for lessening the risk in such contexts or avoiding this particular high risk context altogether. The fact that our results found that alcohol problems, as opposed to heavy use, acted as a mechanism for revictimization suggests that prevention programs and psychotherapeutic intervention may benefit from gearing their interventions specifically to the treatment of substance abuse disorders.

Social-cognitive responses to trauma. Perhaps one of the most significant and novel findings of the current study was that mistrust appeared to serve as a mediator of the relationship between childhood and adult sexual abuse. It may seem paradoxical that being distrustful of others might actually make one more likely to experience further victimization. However, as noted earlier, if one uniformly labels others as untrustworthy, trustworthiness is not a useful heuristic for distinguishing between safe and unsafe persons. Clinically, this finding could be useful to therapists in that abuse victims could be encouraged to identify decision rules for determining other's trustworthiness. Clients could also be encouraged to recall times whenpeople in their lives had behaved in a genuinely trustworthy fashion. This might be especially difficult in instances in which a client truly has few role models upon which to draw. In such instances, trust-building may be the focus of the therapeutic relationship.

Some theorists have argued for the central role of disrupted attachment styles that carry over into adulthood as central to accounting for the observed link between CSA and ASA. Further, attachment disruptions have been previously found to be related to a wide range of forms of abuse (Carey, 1997; Cloitre, 1998; Cloitre, Cohen, & Scarvalone, 2002). However, we did not find evidence that any of the three dimensions of adult attachment served as mediator variables. One possible explanation is that situational factors might be better predictors of victimization than broader, more diffused attributes of the victim such as attachment style. This is consistent with the observation that while the literature provides some evidence for alcohol use, sexual behaviors, and situation-specific assertiveness as mediators (Greene & Navarro, 1998; Merrill et al., 1999; Messman-Moore et al., 2009), less support exits for more general attributes such as self-esteem, dependency, trait assertiveness, or attributional style as mediators (Mandoki & Burkhart, 1989).

PTSD symptoms and associated characteristics.

We did not find evidence that numbing or alexithymia serve as mechanisms for revictimization. The failure of the results to support our hypotheses is consistent with some existing studies in the literature. Both Risser et al. (2006) and Sandberg et al. (1999) failed to find evidence that avoidant PTSD symptoms mediated the relationship between CSA and ASA. Arata (2000) and Messman-Moore et al. (2009) found evidence that PTSD served as a mediator of the association between CSA and ASA, but avoidant symptoms of PTSD were not investigated in isolation. Thus, it may be the case that it is the conglomeration of PTSD symptoms that place a woman at further risk for victimization rather than just the avoidant symptoms in isolation. Alternatively, Orcutt et al.'s (2002) and Risser et al.'s (2006) conceptualization of the PTSD symptoms and revictimization emphasized the role of

hyperarousal rather than dissociation, which fits with our findings with respect to drinking problems and mistrust in the current study. One last possibility is that it may be that aspects of the CSA are differentially related to clusters of PTSD symptoms. For instance, research has shown that PTSD symptoms in children may differ as a function of the chronicity of the abuse experienced (Famularo, Kinscherff & Fenton, 1990). Thus, future research could investigate the possibility different symptoms of PTSD play a greater or lesser role in further victimization depending on specific aspects of the abuse experience.

Limitations and Directions for Future Research

One of the largest limitations of the current study is the lack of diversity in the sample. Specifically, the age, racial and ethnic, and socio-economic makeup of the sample was relatively homogeneous. The young age of the participants may be a problem in that it only gives a narrow segment of time for the deleterious effects of CSA, including adult sexual abuse to surface. This is consistent with the finding from the current study that age was positively correlated with adult sexual abuse. It should be reiterated, however, that age was treated as a control variable in the primary analyses and two mediators were identified even when age was statistically controlled. Nonetheless, future studies should attempt to assess a wider age range, preferably using prospective rather than cross-sectional designs.

Our sample was also predominantly Caucasian and middle to upper middle class. More research is needed to determine whether the same mechanisms hold true for more diverse populations. Alternatively, other mechanisms yet to be identified might be more prominent among racial or ethnic minorities or in less affluent populations. Further, our sample size in general is a limitation in that, while there were a relatively high number of participants with CSA only, the number of participants who had experienced ASA only or revictimization was much

smaller. The small number of revictimized participants is especially problematic when considering the number of mediators tested. Although the fact that we found significant results with a modest number of revictimized participants might speak to the robustness of the findings, it would be essential to replicate the study with a larger number of participants who have experienced sexual abuse revictimization.

Another notable methodological limitation of the current study is that we utilized a cross-sectional, correlational design. Implicit in our hypotheses is the assumption that child sexual abuse causes alcohol problems and mistrust, which in turn leads to rape as an adult. Clearly, correlational data do not allow for causal claims. While experimental designs to test these types of assumptions are obviously not feasible or desirable, the use of prospective designs would at least allow for the examination of the temporal ordering of the variables in question. This is essential because one could easily argue that alcohol problems and mistrust are effects not causes of adult victimization (Classen et al., 2005). Likewise, because we included abuse both before and after 12 years old, in the case of instances when the initial abuse occurred in the window between 12 and 16 years of age, it might have been possible that problems with mistrust and alcohol preceded the adolescent abuse.

Not only should future studies rely more heavily on prospective designs, the length of the time intervals should be longer and start at earlier ages than is typical in this research area. Aside from a few notable exceptions (e.g., Orcutt, Cooper, & Garcia, 2005), most existing prospective studies examining mechanisms for sexual abuse revictimization span the time frame from early college to late college (e.g., Messman-Moore et al., 2009; Sandberg et al., 1999; Testa et al., 2010). Limiting studies in the area to this time frame makes it difficult to conclusively determine which came first, the childhood abuse or the potential mediator in question. Failure to follow

women past college is also problematic in that some risk factors for adult sexual victimization may play more or less of a role as the woman grows older. Studies of the type that we are suggesting are rarely conducted because of the challenges inherent in conducting longitudinal studies, especially with respect to such a highly sensitive issue. However, in order to increase our understanding of the complex, multifaceted developmental pathways from initial to later abuse, we must become increasingly expansive in our methodological approaches to studying revictimization.

Another methodological difficulty that is often present in this kind of research, but should be pointed out nonetheless, is the problem with self-selection bias. That is, because the purpose and nature of the study was prominently advertised, women who were currently struggling with their sexual abuse histories may have chosen not to participate. Thus, the strength of the effects observed in the current study might be even more pronounced if true random selection had occurred.

As mentioned above, our failure to replicate previous research with respect to PTSD symptoms might have been due to the fact that in our study we limited our investigation to avoidant symptoms (more specifically, numbing). Future research should attempt to clarify conceptually and empirically which aspects of PTSD symptomatology predispose women who were abused as children to experience further sexual victimization. It may be the case, as suggested by Risser et al.'s (2006) findings, that hyperarousal is a more vital component than avoidant symptoms. Alternatively, as is consistent with studies finding support for mediation using comprehensive measures of PTSD symptoms (Arata, 2000; Messman-Moore et al., 2009), it is possible that it is a more a matter of severity and breadth of symptoms rather than specific

type. Additionally, different aspects of the abuse such as the chronicity of the abuse could be considered. Such hypotheses could be examined more directly in future studies.

In sum, the current study adds to the growing body of literature on mechanisms for sexual abuse revictimization in a number of important ways. It is the only study to our knowledge that empirically demonstrates that mistrust may serve as mechanisms for sexual abuse revictimization. It also adds to the growing body of research implicating the role of alcohol in revictimization. While a number of limitations of the current study were outlined above, it is our hope that this study will serve as a jumping off point for, specifically, the test of mistrust as a mediator with more stringent methodological designs and, in general, more detailed theoretical articulation of how CSA translates into adult abuse in the hopes of continuing to inform prevention efforts in this area.

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Footnotes

[1] In order to determine whether the age of the participant at the time of the abuse was differentially associated with the variables of interest in the current study, we coded a new variable (time) for whether the abuse was before 12, after 12, or both. We then conducted a series of eight one-way ANOVAs with this variable as the IV and the hypothesized mediators as DVs. No significant differences were found on the hypothesized mediators as a function of whether the CSA abuse occurred before 12, after 12, or both.

[2]In the original analyses, cognitive complexity was included as an additional hypothesized mediator. This variable was not found to mediate of the relationship between CSA and ASA, and its exclusion in the final analyses did not change the strength or significance of any of the other hypothesized mediators. The first author can be contacted for additional information about this variable.

Table 1

Descriptive Statistics for Continuous Study Measures

Variable	Minimum	Maximum	M	SD
Alexithymia	20.00	114.00	44.51	11.36
Adult Sexual Abuse	12.00	25.00	14.30	2.36
Anxiety Dimension of Adult Attachment	6.00	30.00	14.60	4.90
Close Dimension of Adult Attachment	6.00	30.00	22.23	4.34
Depend Dimension of Adult Attachment	7.00	30.00	19.79	4.50
Childhood Sexual Abuse	0.00	29.00	.84	2.17
Drinking Problems	18.00	78.00	31.46	11.71
Mistrust	10.00	40.00	26.50	5.46
Numbing	40.00	167.00	84.41	22.39

Table 2

Hierarchical Multiple Regression Analyses Predicting ASA from CSA While Controlling for Age

Variable	Beta	t	p	$R^2\Delta$	p
Step 1					
Age	.11	3.80	.000	.01	.000
Step 2					
Childhood Sexual Abuse	.20	6.84	.000	.04	.000

Table 3

Hierarchical Multiple Regression Analyses Predicting ASA from CSA and the Hypothesized Mediators (Alexithymia, Adult Attachment Dimensions, Drinking Problems, Mistrust, and Numbing) While Controlling for Age

Variable	Beta	t	p	$R^2\Delta$	p
Step 1					
Age	.11	3.80	.00	.01	.00
Step 2					
Childhood Sexual Abuse	.14	4.94	.00	.14	.00
Alexithymia	.04	1.05	.30		
Attachment Anxiety	.08	2.41	.02		
Attachment Close	-.04	-1.04	.30		
Attachment Depend	-.01	-.30	.76		
Drinking Problems	.17	5.80	.00		
Mistrust	.11	3.22	.00		
Numbing	.05	1.06	.29		

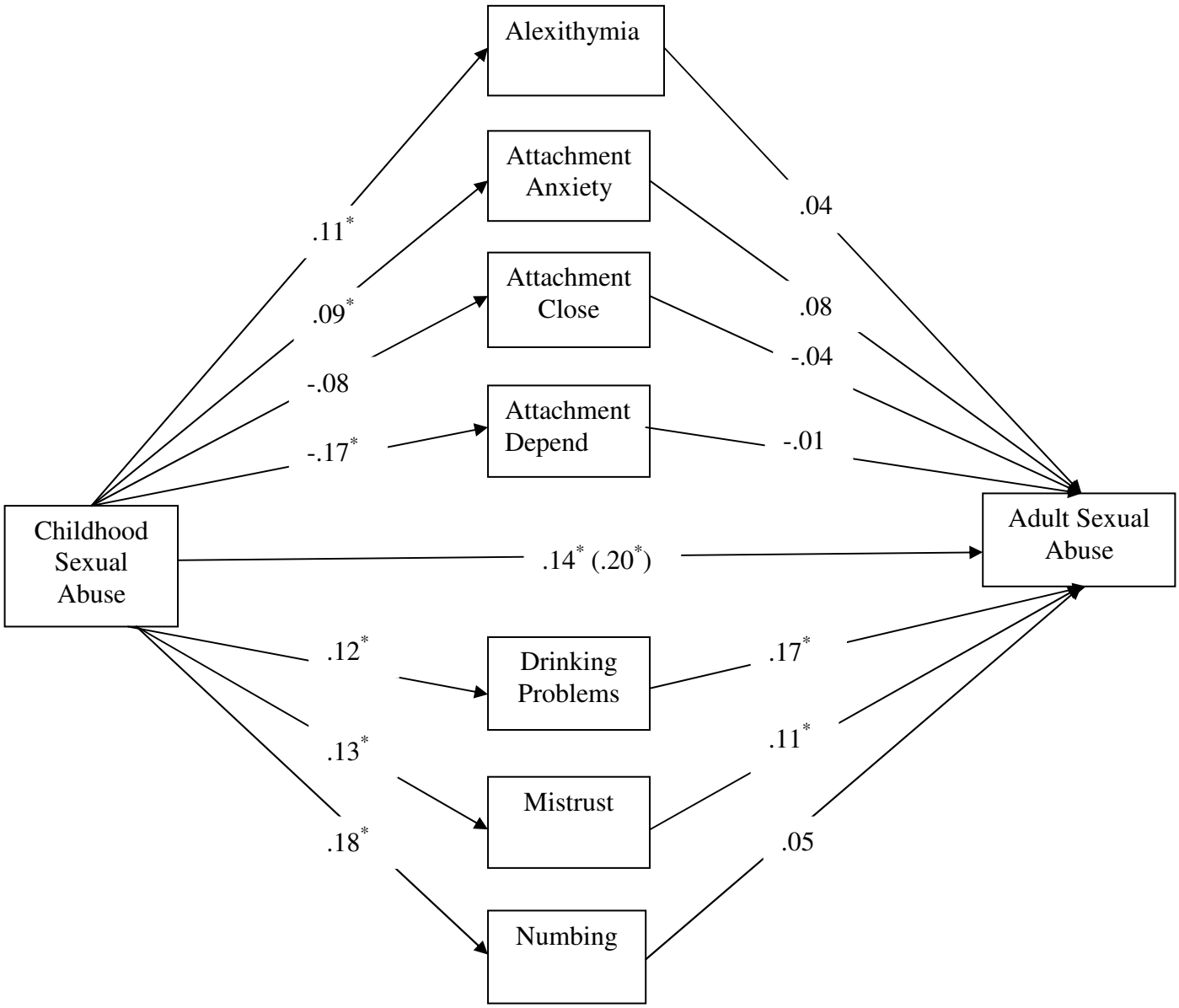

Figure 1. Standardized coefficients (beta) derived by using linear regression to test the effects of the seven hypothesized mediators of the relation between childhood and adult sexual abuse while controlling for age. The value in parentheses represents the relation between childhood sexual abuse and adult sexual abuse, excluding the hypothesized mediators. Bonferroni Correction $^{*}p < .007$.

Appendix A

The Last Four Items of the Sexual Experiences Survey

_____ 10. Had sexual intercourse with a man when you didn't want to because he threatened to use physical force (twisting your arm, holding you down, etc.) if you didn't cooperate?

_____ 11. Had sexual intercourse with a man when you didn't want to because he used some degree of physical force (twisting your arm, holding you down, etc.)?

_____ 12. Been in a situation where a man obtained sexual acts with you such as anal or oral intercourse when you didn't want to by using threats or physical force (twisting your arm, holding you down, etc.)?

_____ 13. Have you ever been raped?