Child Maltreatment
15(4) 324-335
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DOI: 10.1177/1077559510381112
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Child Maltreatment and Women's Adult Sexual Risk Behavior: Childhood Sexual Abuse as a Unique Risk Factor

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Abstract

This study investigated (a) whether childhood sexual abuse (CSA) was uniquely associated with adult sexual risk behavior, after controlling for other types of childhood maltreatment and (b) whether there were additive or interactive effects of different types of maltreatment on adult sexual risk behavior. Participants were 414 women (*M* age = 28 years) attending a publicly funded STD clinic. All women completed a computerized survey assessing childhood maltreatment (sexual, physical, psychological abuse, and neglect) and sexual risk behavior. Analyses showed that sexual abuse, physical abuse, psychological abuse, and neglect were associated with adult sexual risk behavior. Multivariate analyses that controlled for all other forms of child maltreatment showed that only CSA was uniquely associated with adult sexual risk behavior (i.e., percentage of episodes of unprotected sex in the past 3 months and number of lifetime partners). The authors found little support for an additive or an interactive model of the effects of different types of childhood maltreatment on adult sexual risk behavior; CSA alone was the best predictor of adult sexual risk behavior. Sexual risk reduction interventions are needed for women who were sexually abused as children. Continued research on the effects of multitype maltreatment on adult sexual risk behavior is needed.

Keywords

adult survivors, child sexual abuse, emotional/psychological maltreatment, long-term effects, physical abuse

The association between childhood sexual abuse (CSA) and adult sexual risk behavior is well documented (Senn, Carey, & Vanable, 2008). However, CSA is often accompanied by other types of child maltreatment (CM), including physical abuse, psychological abuse, and neglect (Arata, Langhinrichsen-Rohling, Bowers, & O'Brien, 2007; Bensley, Eenwyk, & Simmons, 2000; Edwards, Holden, Felitti, & Anda, 2003), which are also related to adult sexual risk behavior (e.g., Wilson & Widom, 2008). It is unclear whether CSA is uniquely associated with adult sexual risk behavior; furthermore, it is unclear whether different types of CM add together or interact with CSA to contribute to sexual risk behavior (Briere, 1992; Saunders, 2003).

Two models have influenced research on CM outcomes. The *general effects model* suggests that all types of CM are traumatizing and any childhood trauma leads to impairment in psychological functioning (Davis & Petretic-Jackson, 2000; Higgins & McCabe, 2001b). This model is supported by the finding that there is no specific syndrome associated with CSA; rather, sexual abuse is associated with a variety of negative outcomes and there is no unique outcome that characterizes a majority of those who were sexually abused (Kendall-Tackett, Williams, & Finkelhor, 1993). There is also evidence that individuals who experienced sexual abuse only do not differ in psychological outcomes from individuals who experienced physical abuse only (Arata et al., 2007), suggesting there may be a general effect of any type of trauma on subsequent psychological functioning.

Several general theories of childhood trauma, including those proposed by Briere (2002) and Cicchetti and Toth (2005), include mechanisms by which CM could lead to adult sexual risk behavior. These theories suggest that CM leads to insecure attachment, which could play a role in adult sexual risk behavior (Briere, 2002; Cicchetti & Toth, 2005). Empirical research suggests an association between CM and less secure and more disorganized attachment in childhood (Cyr, Euser, Bakermans-Kranenburg, & Van Ijzendoorn, 2010); these attachment patterns formed during childhood are hypothesized to persist and to influence adult romantic attachment (Cassidy, 2000; Fraley & Shaver, 2000). Individuals who are insecurely attached in their adult romantic relationships may have difficulty trusting others or allowing others to get too close (Fraley & Shaver, 2000), which could lead to multiple, brief sexual relationships. Alternatively, adults who are insecurely attached

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in their romantic relationships may be so desperate for closeness and love with their partner, and so fearful of rejection (Fraley & Shaver, 2000) that they agree to engage in unsafe sexual risk behavior to maintain their relationship.

In contrast to a general effects model, the *differential effects model* holds that specific types of CM are associated with specific outcomes (Davis & Petretic-Jackson, 2000; Higgins & McCabe, 2001b). In support of this model, reviews of the research literature have found that sexually abused children consistently exhibit more sexualized behavior as children (Kendall-Tackett et al., 1993), and more sexual risk behavior as adults (Senn et al., 2008), suggesting that sexual behavior may be a specific outcome related to CSA.

Theory also suggests that CSA may be uniquely associated with sexual behavior. In their traumagenic dynamics model, Finkelhor and Browne (1985) suggest several mechanisms by which CSA may lead to adult sexual risk behavior. Traumatic sexualization, where a child's sexual behavior is inappropriately shaped through rewards or attention, could lead to having multiple sexual partners or to unsafe sex in adulthood, with the hope of obtaining affection or other rewards for the sexual behavior. Feeling betrayed by the abuser, or by others' responses to abuse disclosure, could lead to difficulty trusting others and forming close relationships, which could later result in multiple brief sexual relationships. Powerlessness experienced during the abuse could lead women to feel that they are unable to control sexual situations, which could make it difficult for them to refuse sex (leading to multiple sexual partners) or to refuse unsafe sex (leading to unprotected sex). Although betrayal and powerlessness could result from any type of CM, traumatic sexualization is hypothesized to be uniquely a result of CSA (Finkelhor & Browne, 1985).

Researchers have found an association between CSA and adult sexual risk behavior in a wide variety of populations, including national samples of women (Bensley et al., 2000), women in drug treatment (El-Bassel, Simoni, Cooper, Gilbert, & Schilling, 2001), incarcerated women (Mullings, Marquart, & Brewer, 2000), and women attending STD clinics (Senn, Carey, Vanable, Coury-Doniger, & Urban, 2006). However, few studies have investigated whether CSA is *uniquely* associated with sexual risk behavior after controlling for other forms of CM; the few studies to do so have reported conflicting results. Some authors report that sexual abuse is associated with more frequent intercourse, more partners, engaging in sex work, and earlier age of first intercourse, after controlling for other types of CM (Littleton, Breitkopf, & Berenson, 2007; Luster & Small, 1997; Newcomb, Locke, & Goodyear, 2003; Simons & Whitbeck, 1991; Stock, Bell, Boyer, & Connell, 1997). Other authors have found that after controlling for other types of CM, sexual abuse was not associated with sexual risk behavior (Hobfoll et al., 2002; Rodgers et al., 2004). Although studies have often controlled for physical abuse, other types of CM have been less well investigated (e.g., Luster & Small, 1997; Simons & Whitbeck, 1991; Stock et al., 1997). Thus, research is needed to clarify the association between CSA and adult sexual risk behavior, after controlling for other types of CM.

Furthermore, it is unclear whether there is an additive or interactive effect of different types of CM on adult sexual risk behavior. Additive effects are assessed by creating a summary score of the number of different types of CM experienced or by entering CM variables simultaneously into a model and examining the additional variance accounted for by including additional predictors. The assessment of additive effects is consistent with a general effects model of CM, which posits that the increased burden associated with each additional traumatic event will reduce psychological functioning and lead to greater adverse outcomes (Davis & Petretic-Jackson, 2000; Higgins & McCabe, 2001b). Several researchers have found that a greater number of different types of CM or adverse childhood events was associated with greater sexual risk behavior and STD diagnosis (Dube, Felitti, Dong, Giles, & Anda, 2003; Hahm, Lee, Ozonoff, & Van Wert, 2010; Rodgers et al., 2004; Smith, Leve, & Chamberlain, 2006), suggesting that there may be an additive effect of experiencing different forms of CM.

However, there are limitations to additive models, particularly models in which a summary score of the number of types of CM experienced is created. First, these models weight all conditions equally; additive models do not take into account that one condition may be more strongly associated with an outcome (Lash et al., 2007). Second, additive models do not allow for the possibility that certain combinations of conditions may be associated with worse outcomes than other combinations (Lash et al., 2007). For example, the combination of CSA (which uniquely leads to traumatic sexualization) and any other type of CM (which leads to general psychological impairment) may result in the greatest adult sexual risk behavior, whereas other combinations of CM types that do not include CSA, and therefore lack the traumatic sexualization component, may not lead to increased adult sexual risk behavior. Finally, if certain types of abuse are more likely to occur as part of a constellation of multitype maltreatment, the sum of the number of types of CM may be confounded with abuse type.

The assessment of interaction effects allows investigators to explore these possibilities, consistent with a differential effects model where certain types of CM are believed to be more strongly associated with certain outcomes (Davis & Petretic-Jackson, 2000; Higgins & McCabe, 2001b). To our knowledge, three studies have explored the interactions of different types of CM on adult sexual risk behavior. In one study, adolescents who reported a combination of (a) sexual abuse and neglect or (b) sexual abuse, physical abuse, and neglect were more likely to report multiple sexual partners than those who reported no CM; those reporting sexual abuse only, physical abuse only, neglect only, a combination of sexual abuse and physical abuse, or a combination of physical abuse and neglect did not differ from the no CM group (Arata et al., 2007). Luster and Small (1997) found an interaction between physical and sexual abuse, such that those experiencing both types of abuse reported more sexual partners than those who were not abused. In contrast, Hobfoll et al. (2002) did not find an interaction between CSA and physical/emotional abuse on sexual risk

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behavior. Overall, there is limited evidence that specific types of abuse may interact to result in sexual risk behavior; further research is needed.

Thus, this study had three primary goals: (a) to determine whether CSA is associated with adult sexual risk behavior after controlling for other types of CM and whether the other types of CM add to the prediction of adult sexual risk behavior, above and beyond what is accounted for by CSA alone (Additive Model #1); (b) to determine whether experiencing more types of CM is associated with greater adult sexual risk behavior (Additive Model #2); and (c) to determine whether different types of CM interact to result in greater sexual risk behavior than experiencing a single type of CM (Interactive Model). Based on previous findings and theory, we hypothesized that (a) CSA would be uniquely associated with sexual risk behavior after controlling for other types of CM; (b) experiencing more types of CM would be associated with greater sexual risk behavior; and (c) the combination of CSA and any other type of CM, but not any combinations of CM that do not include CSA, would be associated with the greatest sexual risk behavior.

Method

Participants

Participants were 414 women (66% African American, 18% Caucasian, 7% Multiracial, 1% American Indian, 1% Asian, <1% Pacific Islander, and 6% Other) attending a publicly funded STD clinic. Women ranged in age from 18 to 55 ($M = 28$ years; $SD = 9$ years); most had a high school education or less (57%; $n = 236$), had never married (79%; $n = 325$), and earned < $15,000/year (55%; $n = 224$) with 48% ($n = 199$) being unemployed. Ten (2%) reported forced or coerced sexual contact in the past 3 months.

Procedures

A female research assistant (RA) screened patients in a private room; 85% of patients met study criteria (i.e., age 18 or older, sexually active in the past 3 months). Eligible patients had the study explained; those who were interested and demonstrated capacity to consent (Zayas & Perez, 2005) were enrolled. Sixty-two percent of those who were eligible agreed to participate. The primary reason for declining participation was lack of time (reported by 79% of decliners). Other reasons for declining participation included just wanting treatment; lack of interest; and physical or psychological issues (e.g., very tired or too anxious). Next, women completed a calendar of salient events to orient them to the assessment time frame and then completed an Audio Computer-Assisted Self-Interview (ACASI) in private. After the ACASI, women engaged in audiotaped role-plays and completed a condom skills protocol (Forsyth, Carey, & Fuqua, 1997). Participants were reimbursed $20 for their time and provided with a list of local, low- and no-cost counseling centers. Participation in the study took approximately 1 hr. All procedures were approved by the Institutional Review Boards of the participating institutions.

Measures

Demographic characteristics. Participants reported their age, race, education level, income, employment status, and marital status. Participants were also asked whether they were ever forced or pressured to have sexual contact and whether this occurred in the past 3 months.

Childhood maltreatment. To assess CSA, participants reported details of their sexual experiences before age 18; they could report as many as 10 experiences. Items included (a) the participant's age at the time of the experience; (b) the other person's age; (c) the type of experience (kissing, sexual touching, receiving or giving oral sex, vaginal sex, or anal sex); and (d) whether the experience involved force or threat of force. Items were adapted from Finkelhor (1979). Women were included in the CSA category if they (a) reported oral, vaginal, or anal sex at age 12 or younger with someone 5 or more years older; (b) reported oral, vaginal, or anal sex at age 16 or younger with someone 10 or more years older; or (c) reported oral, vaginal, or anal sex at age 16 or younger where they were forced or threatened with force.

Items from the Comprehensive Child Maltreatment Scale (CCMS; Higgins & McCabe, 2001a) assessed childhood physical abuse, psychological abuse, and neglect. Prior research established the reliability and validity of the CCMS when assessing adults' retrospective reports of CM (Higgins & McCabe, 2001a). Participants rated the frequency of their caregivers' behaviors during childhood on a 5-point scale (*never or almost never* [0] to *very frequently* [4]). Three items assessed physical abuse (smacked, grabbed, or shaken; hit, punched, or kicked; and hurt to the point of requiring medical attention); two items assessed psychological abuse (ridiculed or embarrassed; and made afraid or used cruelty); and three items assessed neglect (not given regular meals or baths; shut in a room for an extended period of time; and ignored or not spoken to for an extended period of time). One psychological maltreatment item included in the original measure was dropped (yelled) because the majority of participants (85%) indicated that their parents engaged in this behavior at least occasionally. Internal consistency reliability for the three subscales in this sample was acceptable ($\alpha = .77$ for physical abuse, .90 for psychological abuse, and .72 for neglect). Responses were dichotomized, so that participants who reported their parents at least occasionally engaged in these behaviors were considered to have experienced the corresponding form of CM; participants who indicated their parents or caregivers never or almost never engaged in those behaviors were categorized as not having experienced that type of CM. This definition is consistent with (a) large-scale studies of CM that have categorized even occasional experiences as abusive (e.g., Finkelhor, Ormrod, & Turner, 2007) and (b) our definition of sexual abuse, in which even a single instance was categorized as CSA. The number of different CM types experienced was summed to create an additive CM score.

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Adult sexual risk behavior. Participants reported the number of men and the number of women with whom they had sex in their lifetime and in the past 3 months. Responses were summed to derive the total number of sexual partners (lifetime and past 3 months). Participants reported the number of condom-protected and unprotected (i.e., without a condom) vaginal and anal sex episodes with steady and nonsteady partners in the past 3 months. Responses were summed to derive the total number of unprotected sex (vaginal + anal) episodes and the percentage of unprotected sex episodes [(unprotected vaginal + unprotected anal)/(unprotected vaginal + protected vaginal + unprotected anal + protected anal)] × 100 in the past 3 months. All questions have been used extensively in previous research with women (Carey et al., 2000; Carey, Vanable, Senn, Coury-Doniger, & Urban, 2008) and are consistent with published recommendations on assessing sexual risk behavior (Schroder, Carey, & Vanable, 2003; Weinhardt, Forsyth, Carey, Jaworski, & Durant, 1998).

Data Analysis

Data were inspected for outliers (>3 *SD* from the 75th percentile); outliers were trimmed (to 3 *SD* from the 75th percentile + 1). The percentage of episodes of unprotected sex was transformed [2 × arcsine (sqrt %)]. Data that were non-normally distributed (i.e., number of episodes of unprotected sex) were transformed using a $\log_{10}$ (x + .0001) transformation.

Analyses determined which demographic variables were associated with CM and with the dependent variables and these variables were used as covariates in subsequent analyses. First, to determine whether CM types were *independently* associated with sexual risk behavior, analyses of covariance (ANCOVAs) with a single independent variable (i.e., sexual abuse, physical abuse, psychological abuse, or neglect) were conducted. Second, to determine whether CM types were *uniquely* associated with sexual risk behavior, controlling for other CM types, ANCOVAs were conducted with four independent variables (sexual abuse, physical abuse, psychological abuse, and neglect). Third, to determine whether other types of CM contributed to the prediction of adult sexual risk behavior beyond the variance accounted for by CSA (Additive Model #1), the change in R^2 between the models including only CSA and the models including all four types of CM was compared. Fourth, to determine whether experiencing more types of CM was associated with sexual risk behavior (Additive Model #2), ANCOVAs were conducted with the sum of the number of CM types experienced as the independent variable. To ensure that an association between the number of CM types and sexual risk behavior was not due to individuals who experienced CSA being more likely to have experienced multiple types of CM, we also conducted additive analyses controlling for the effects of CSA. Finally, to determine whether the interaction between specific types of CM was associated with sexual risk behavior (Interactive Model), ANCOVAs including all four CM types as the independent variables, as well as two-way interactions between the CM types, were conducted. Significant interactions were investigated using Tukey's test.

Results

Adult Sexual Risk Behavior

Participants reported engaging in high rates of lifetime and recent sexual risk behavior. On average, women reported $M = 21.9$ lifetime sexual partners ($SD = 21.9$; $Mdn = 13$) and an average of $M = 2.1$ ($SD = 1.9$) partners during the past 3 months. Women reported an average of $M = 16.9$ episodes of unprotected sex ($SD = 20.8$) in the past 3 months; on average, $M = 67\%$ of sexual episodes in the past 3 months were unprotected ($SD = 34\%$).

Childhood Maltreatment

As indicated in Table 1, participants reported high rates of CM. Most women (80%; $n = 330$) reported at least one type of CM, with 56% ($n = 232$) reporting multiple types of CM. Few participants (4%; $n = 18$) reported CSA without another type of abuse. Those who reported CSA were more likely than those who did not to report physical abuse, $\chi^2(N = 414) = 11.78$, $p < .001$, OR = 2.12 [CI = 1.37, 3.26]; psychological abuse, $\chi^2(N = 414) = 16.96$, $p < .001$, OR = 2.58 [CI = 1.63, 4.08]; and neglect, $\chi^2(N = 414) = 14.96$, $p < .001$, OR = 2.29 [CI = 1.50, 3.51].

Covariate Analyses

Race (dichotomized as non-Caucasian vs. Caucasian, because being non-Caucasian may serve as a marker for having experienced racial discrimination) was associated with psychological abuse, χ^2 ($N = 413$) = 4.00, $p < .05$; Caucasians were more likely to report childhood psychological abuse, 70% versus 57%. Current age was associated with CSA, $t(412) = -2.19$, $p < .05$, and with neglect, $t(412) = -2.06$, $p < .05$. Older individuals were more likely to report CSA ($M = 29.3$, $SD = 9.1$ years vs. $M = 27.2$, $SD = 8.8$ years) and neglect ($M = 28.8$, $SD = 9.7$ years vs. $M = 27$, $SD = 8.2$ years).

Education was associated with the number of sexual partners in the past 3 months, $t(412) = -2.34$, $p < .05$; those with a high school or less education reported more sexual partners than those with some college ($M = 2.3$, $SD = 2.1$ vs. $M = 1.9$, $SD = 1.6$). Employment was associated with the number of partners in the past 3 months, $t(412) = -2.45$, $p < .05$, and with the number of lifetime partners, $t(412) = -2.04$, $p < .05$. Unemployed participants reported more partners (past 3 months and lifetime) than employed participants ($M = 2.4$, $SD = 2.1$ vs. $M = 1.9$, $SD = 1.6$, 3 months; $M = 24.2$, $SD = 23.3$ vs. $M = 19.8$, $SD = 20.3$, lifetime). Income was associated with the number of sexual partners in the past 3 months, $t(404) = -3.89$, $p < .001$, and with the number of lifetime partners, $t(404) = -2.46$, $p < .05$, with participants making <$15,000/year reporting more 3-month and lifetime partners than those making ≥$15,000/year ($M = 2.5$, $SD = 2.2$ vs. $M = 1.8$, $SD = 1.3$, 3 months; $M = 24.6$, $SD = 23.5$ vs. $M = 19.2$, $SD = 19.7$, lifetime). Age was associated with the number of lifetime partners, $F(1, 412) = 26.02$, $p < .001$, and with

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Table 1. Prevalence of Childhood Maltreatment

Any Experience of Abuse	*n*	%
Sexual abuse	129	31
Physical abuse	221	53
Psychological abuse	247	60
Neglect	192	46
Sexual + physical	85	21
Sexual + psychological	96	23
Sexual + neglect	78	19
Physical + psychological	180	43
Physical + neglect	152	37
Psychological + neglect	158	38
Sexual + physical + psychological abuse	76	18
Sexual + physical + neglect	65	16
Sexual + psychological + neglect	70	17
Physical + psychological + neglect	142	34
Sexual + physical + psychological + neglect	63	15

the percentage of episodes of unprotected sex, $F(1, 404) = 6.12$, $p < .05$, with older age associated with more lifetime sex partners and a greater percentage of episodes of unprotected sex. Variables that were related to either abuse status or the sexual behavior outcome were included as covariates in the relevant analyses.

Independent Relations Between Type of CM and Adult Sexual Risk Behavior

Table 2 displays the *M*s and *SD*s for each sexual behavior outcome, by abuse status. In analyses investigating each type of CM as a predictor of adult sexual risk behavior, each of the four types of CM was related to adult risk behavior, after adjusting for covariates (Table 3). CSA was associated with a greater percentage of episodes of unprotected sex in the past 3 months and more lifetime partners. Physical abuse was associated with a greater number of lifetime partners. Psychological abuse was associated with more lifetime partners. Neglect was associated with a greater number of partners in the past 3 months and a greater number of lifetime partners. None of the CM variables were associated with the number of episodes of unprotected sex in the past 3 months.

Unique Relations Between Each Type of CM and Adult Sexual Risk Behavior, Controlling for Other Types of CM

In multivariate analyses controlling for covariates and all other types of abuse, CSA remained associated with the percentage of episodes of unprotected sex in the past 3 months and with the number of lifetime partners. Physical abuse, psychological abuse, and neglect were not associated with any of the adult sexual risk behavior outcomes (Table 4).

Additive Effect of CM

To determine whether there was an additive effect of the different types of CM, we first compared the percentage of variance explained by the model including CSA only to the percentage of variance explained by a model including all four types of CM as predictors. The change in R^2 between the models was nonsignificant for all of the sexual risk behavior outcomes, indicating that the other types of CM did not improve the prediction of sexual risk behavior, beyond what was predicted by CSA and the covariates (Table 4).

To further investigate the possibility of an additive effect of CM, we summed the number of different types of CM experienced and investigated whether this variable was associated with sexual risk behavior (Table 5). The sum of the number of different types of CM experienced was associated with the number of lifetime partners. In follow-up analyses, those with no CM reported fewer lifetime partners than those with two, three, or four CM experiences. In addition, those with one CM experience reported fewer sex partners than those with four CM experiences. The number of types of CM experiences was not associated with the number or percentage of episodes of unprotected sex or with the number of partners in the past 3 months.

To ensure that this effect was not due to CSA being confounded with the number of other types of CM experienced, we conducted analyses controlling for the effect of CSA. (In these analyses, the independent variable was the sum of all types of CM other than CSA.) CSA was associated with the percentage of episodes of unprotected sex and with the number of lifetime partners. The number of types of CM was not associated with any of the sexual risk behavior outcomes after controlling for the effects of CSA.

Interactive Effect of CM

Analyses were conducted to investigate associations between each pairwise interaction of CM types and adult sexual risk behavior. The cell sizes formed by each two-way interaction of abuse types are presented in Table 6. The interaction between CSA and psychological abuse was associated with both the number of episodes of unprotected sex and the percentage of episodes of unprotected sex in the past 3 months (Table 7). Follow-up Tukey's tests showed that the group that experienced CSA only reported more episodes of unprotected sex (adjusted $M = 24.5$, $SD = 22.6$) than the group that experienced neither CSA nor psychological abuse (adjusted $M = 11.5$, $SD = 18.3$). Similarly, the group that experienced CSA only reported a greater percentage of episodes of unprotected sex (adjusted $M = 84$, $SD = 26\%$) than the group reporting neither CSA nor psychological abuse (adjusted $M = 61$, $SD = 36\%$). The group reporting both CSA and psychological abuse and the group reporting psychological abuse only did not differ from the other groups in the number of episodes of unprotected sex (adjusted *M* CSA + psychological = 18.6, $SD = 20.3$; adjusted *M* psychological only = 18.5, $SD = 22.4$) or the percentage of episodes of unprotected sex (adjusted *M* CSA + psychological = 69, $SD = 35\%$; adjusted *M* psychological only = 69, $SD = 33\%$).

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Table 2. Adult Sexual Risk Behavior by Maltreatment Category

	Unpro. Sex (No.)		Unpro. Sex (%)		Partners, 3 Months (No.)		Partners, Life (No.)	
	M	*SD*	*M*	*SD*	*M*	*SD*	*M*	*SD*
Abuse type								
Sexual	19.5	21.3	72	34	2.3	2.1	31.8	25.2
No sexual	15.7	20.5	64	34	2.1	1.8	17.4	18.6
Physical	15.5	20.2	66	34	2.3	1.9	24.4	22.3
No physical	18.5	21.5	68	35	2.0	1.8	19.1	21.1
Psych.	17.1	21.6	67	34	2.3	1.9	24.4	22.7
No Psych.	16.6	19.8	67	35	1.9	1.8	18.2	20.2
Neglect	15.8	20.2	66	34	2.4	2.0	25.2	23.4
No neglect	17.9	21.4	68	35	1.9	1.7	19.1	20.1
Child maltreatment, no. types experienced								
0	15.9	19.4	64	36	1.8	1.6	12.4	14.7
1	17.5	21.5	66	34	2.0	1.6	19.9	20.5
2	20.0	23.0	72	34	2.1	2.0	25.9	23.1
3	15.8	21.1	67	34	2.4	2.1	23.4	22.6
4	15.8	19.1	66	34	2.4	2.1	30.9	24.6

Note.; No. = number; Psych. = psychological; Unpro. sex = unprotected sex (i.e., no condom used).

The interaction between psychological abuse and neglect was associated with the number of lifetime partners, $p < .05$. However, in follow-up Tukey's tests, none of the groups were significantly different from each other, perhaps due to the conservative nature of the Tukey's test, which controls for experimentwise error.

Discussion

Participants reported high rates of CM; 80% of the sample reported experiencing at least one type of childhood abuse. These rates are higher than those found in the general population, where 47% of women report CM (Hahm et al., 2010). Across men and women, national estimates for CSA average 5%, compared to 31% in the current study; for physical abuse, national rates average 28%, compared to 37% in the current study; and national rates for neglect range from 12% to 38%, compared to 46% in this study (Hahm et al., 2010; Hussey, Chang, & Kotch, 2006). The rates of abuse reported in this study may reflect the adverse childhood conditions of many participants and/or the broad CM criteria used in the current study.

Consistent with findings from other studies, participants reporting one type of CM frequently reported experiencing at least one other type of CM (Edwards et al., 2003; Finkelhor et al., 2007; Higgins & McCabe, 2000). Researchers have hypothesized that this clustering of different types of CM may be due to bidirectional influences between children's environments and children's own personal characteristics; in addition, CM may shape children's attitudes and behaviors in a way that increases the likelihood of further CM (Finkelhor et al., 2007; Lynch & Cicchetti, 1998). The high rates of cooccurrence of different types of CM found in this and other studies indicate that researchers should not study each type of CM in isolation.

Three major findings emerged from this research. First, CSA remained uniquely associated with adult sexual risk behavior, even after controlling for other types of CM; in contrast, physical abuse, psychological abuse, and neglect were not uniquely associated with adult sexual risk behavior after controlling for other types of CM. This finding suggests that there may be differential effects of CSA on outcomes, specifically on sexual behavior outcomes, and is in accordance with both empirical findings and theory. Several researchers have found that CSA is associated with adult sexual risk behavior, after controlling for other types of CM (e.g., Littleton et al., 2007; Newcomb et al., 2003). Although some researchers have not found this association (e.g., Hobfoll et al., 2002; Rodgers et al., 2004), this may be due to lack of power; because CM types are highly correlated, a large sample size is needed to be able to detect an effect of CSA after partialing out the effect of other forms of abuse (Briere, 1988, 1992). In addition, studies differ in their measurement and definition of CM, as well as in the different types of CM that were assessed, which could explain differences in findings across studies. The two studies that did not find an association between CSA and adult sexual risk behavior (after controlling for other types of CM) differed from the current study in three ways: (a) they used a continuous (rather than a dichotomous) measure of each abuse type; (b) they had several hundred fewer participants than the current study; and (c) these studies either used more (five types of CM, with neglect partitioned into emotional neglect and physical neglect) or less (two types of CM: sexual abuse and physical/emotional abuse) CM categories compared to the current study (Hobfoll et al., 2002; Rodgers et al., 2004).

Finkelhor and Browne's (1985) traumagenic dynamics theory suggests that sexual behavior may be an outcome that is uniquely associated with CSA. Traumatic sexualization, in which a child's sexual feelings and attitudes are inappropriately shaped and reinforced, is believed to be uniquely associated with CSA. As individuals who were sexually abused come to associate sexual behavior with affection or rewards, or learn

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Table 3. Independent Relations Between Child Maltreatment and Adult Sexual Risk Behavior

	Unpro. Sex (No.)			Unpro. Sex (%)			Partners, 3 Months (No.)			Partners, Life (No.)		
Variable	*df*	*F*	η^2	*df*	*F*	η^2	*df*	*F*	η^2	*df*	*F*	η^2
Sexual abuse model												
Education							1,400	1.49				
Employment							1,400	1.23		1,401	1.73	
Income							1,400	7.87**	.02	1,401	2.76	
Age	1,408	1.78		1,403	5.06*	.01	1,400	0.33		1,401	20.11***	.04
Sexual abuse	1,408	1.21		1,403	3.96*	.01	1,400	0.68		1,401	36.47***	.08
Physical abuse model												
Education							1,401	1.71				
Employment							1,401	1.17		1,401	1.49	
Income							1,401	7.72**	.02	1,401	3.12	
Age				1,403	6.25*	.02				1,401	24.48***	.06
Physical abuse	1,409	0.44		1,403	0.29		1,401	2.80		1,401	4.58*	.01
Psychological abuse model												
Education							1,399	2.36				
Employment							1,399	1.48		1,399	2.03	
Income							1,399	8.27**	.02	1,399	3.77	
Race	1,407	0.39		1,401	0.03		1,399	4.43*	.01	1,399	2.87	
Age				1,401	6.10*	.02				1,399	23.00***	.05
Psychological abuse	1,407	0.00		1,401	0.08		1,399	3.51		1,399	5.38*	.01
Neglect model												
Education							1,400	1.33				
Employment							1,400	1.07		1,401	1.40	
Income							1,400	7.59**	.02	1,401	2.93	
Age	1,408	1.32		1,403	6.42*	.02	1,400	0.21		1,401	23.02***	.05
Neglect	1,408	0.53		1,403	0.61		1,400	4.12*	.01	1,401	5.10*	.01

Note. Unpro. sex = unprotected sex; No. = number. A blank space in the η^2 column indicates no significant variance was explained by the variable.
* $p < .05$.
** $p < .01$.
*** $p < .001$.

Table 4. Unique Relations Between Child Maltreatment and Adult Sexual Risk Behavior

	Unpro. Sex (No.)			Unpro. Sex (%)			Partners, 3 Months (No.)			Partners, Life (No.)		
Variable	*df*	*F*	η^2	*df*	*F*	η^2	*df*	*F*	η^2	*df*	*F*	η^2
Education							1,395	2.32				
Employment							1,395	1.22		1,396	1.99	
Income							1,395	7.72**	.02	1,396	3.07	
Race	1,403	0.33		1,398	0.04		1,395	4.52*	.01	1,396	3.48	
Age	1,403	1.49		1,398	5.33*	.01	1,395	0.11		1,396	18.05***	.04
Sexual abuse	1,403	1.59		1,398	4.94*	.01	1,395	0.09		1,396	31.04***	.07
Physical abuse	1,403	0.31		1,398	0.17		1,395	0.25		1,396	0.18	
Psychological abuse	1,403	0.10		1,398	0.01		1,395	0.71		1,396	0.41	
Neglect	1,403	0.39		1,398	0.50		1,395	0.98		1,396	0.47	
	R^2			R^2			R^2			R^2		
R^2 CSA only model	.008			.03			.06			.17		
R^2 all CM model	.01			.03			.07			.17		
	df	*F*		*df*	*F*		*df*	*F*		*df*	*F*	
R^2 Δ	3,403	0.27		3,398	0		3,395	1.42		3,396	0	

Note. CM = childhood maltreatment; CSA = childhood sexual abuse; No. = number; Unpro. Sex = unprotected sex. A blank space in the η^2 column indicates no significant variance was explained by the variable.
* $p < .05$.
** $p < .01$.
*** $p < .001$.

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Table 5. Relation Between Number of Different Types of Childhood Maltreatment and Adult Sexual Risk Behavior

	Unpro. Sex (No.)			Unpro. Sex (%)			Partners, 3 Months (No.)			Partners, Life (No.)		
Variable	*df*	*F*	η^2	*df*	*F*	η^2	*df*	*F*	η^2	*df*	*F*	η^2
Model A: Control for covariates												
Education							1,398	1.74				
Employment							1,398	1.08		1,398	1.44	
Income							1,398	7.46**	.02	1,398	2.55	
Age				1,400	5.68*	.01				1,398	20.14***	.04
CM types (no.)	4,406	0.58		4,400	0.24		4,398	1.64		4,398	6.28***	.05
Model B: Control for covariates and sexual abuse												
Education							1,397	1.60				
Employment							1,397	1.08		1,398	1.66	
Income							1,397	7.43**	.02	1,398	2.57	
Age	1,405	1.64		1,400	5.45*	.01	1,397	0.17		1,398	19.38***	.04
Sexual abuse	1,405	0.47		1,400	4.74*	.01	1,397	1.74		1,398	31.00***	.06
CM types (no., not including CSA)	3,405	1.59		3,400	0.69		3,397	0.10		3,398	2.14	

Note. CM = childhood maltreatment; CSA = childhood sexual abuse; No. = number; Unpro. Sex = unprotected sex. A blank space in the η^2 column indicates no significant variance was explained by the variable.
* $p < .05$.
** $p < .01$.
*** $p < .001$.

Table 6. Cell Sizes Formed by Each Two-Way Interaction of Childhood Maltreatment Types

Childhood Maltreatment Type	*n*
Sexual abuse × Physical abuse	
No sexual abuse + no physical abuse	149
No sexual abuse + physical abuse	136
Sexual abuse + no physical abuse	44
Sexual abuse + physical abuse	85
Sexual abuse × Psychological abuse	
No sexual abuse + no psychological abuse	134
No sexual abuse + psychological abuse	151
Sexual abuse + no psychological abuse	33
Sexual abuse + psychological abuse	96
Sexual abuse × Neglect	
No sexual abuse + no neglect	171
No sexual abuse + neglect	114
Sexual abuse + no neglect	51
Sexual abuse + neglect	78
Physical abuse × Psychological abuse	
No physical abuse + no psychological abuse	126
No physical abuse + psychological abuse	67
Physical abuse + no psychological abuse	41
Physical abuse + psychological abuse	180
Physical abuse × Neglect	
No physical abuse + no neglect	153
No physical abuse + neglect	40
Physical abuse + no neglect	69
Physical abuse + neglect	152
Psychological abuse × Neglect	
No psychological abuse + no neglect	133
No psychological abuse + neglect	34
Psychological abuse + no neglect	89
Psychological abuse + neglect	158

to use sex to get their needs met, they may acquiesce to sex with multiple partners and exhibit vulnerability to unsafe sex. Another potential pathway from CSA to sexual risk behavior that has received empirical support is stigmatization. In a longitudinal study, Feiring, Simon, and Cleland (2009) found an indirect path from CSA severity to stigmatization and then to sexual difficulties (a composite measure of sexual concerns and dysfunctional sexual behavior). They suggest that the shame and self-blame experienced as a result of the sexual abuse may continue into later sexual relationships, resulting in a negative sexual self-schema and impaired sexual relationships (Feiring et al., 2009), which could lead to multiple sexual partners. Other pathways from CSA to adult sexual risk behavior that have received empirical support include substance use and partner violence (NIMH Multisite Prevention Trial Group, 2001; Senn et al., 2006). Further research is needed to investigate these and other pathways through which CSA may lead to adult risk behavior.

Caution must be exercised when interpreting the finding that CSA, but not other types of CM, was associated with adult sexual risk behavior. Because ANCOVA assesses only the unique variance associated with each predictor, it is possible that the other types of CM are associated with sexual risk behavior but, because they share so much variance with CSA, once that shared variance is partialed out, we were no longer able to detect an effect. Briere (1988, 1992) cautioned that when using statistical techniques to covary or partial out effects, results may be misleading, if the CM variables are highly correlated, as they were in this study, and that such analyses should not be conducted to determine which independent variables are more important. We can conclude from this study that CSA is uniquely associated with adult sexual risk behavior, after

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Table 7. Interactions Between Different Types of Childhood Maltreatment and Adult Sexual Risk Behavior

	Unpro. Sex (No.)			Unpro. Sex (%)			Partners, 3 Months (No.)			Partners, Life (No.)		
Variable	*df*	*F*	η^2	*df*	*F*	η^2	*df*	*F*	η^2	*df*	*F*	η^2
Education							1,389	1.93				
Employment							1,389	1.14		1,390	1.55	
Income							1,389	8.44**	.02	1,390	3.68	
Race	1,397	0.22		1,392	0.13		1,389	4.32*	.01	1,390	3.92*	.01
Age	1,397	1.80		1,392	4.52*	.01	1,389	0.11		1,390	17.63***	.04
Sexual abuse	1,397	4.87*	.01	1,392	9.20**	.02	1,389	0.01		1,390	29.60***	.06
Physical abuse	1,397	0.65		1,392	0.91		1,389	0.07		1,390	0.15	
Psychological abuse	1,397	0.28		1,392	0.34		1,389	0.91		1,390	0.03	
Neglect	1,397	0.09		1,392	0.14		1,389	0.48		1,390	0.91	
Sexual abuse × physical abuse	1,397	0.00		1,392	0.14		1,389	0.89		1,390	2.23	
Sexual abuse × psychological abuse	1,397	7.89**	.02	1,392	5.79*	.01	1,389	1.46		1,390	0.20	
Sexual abuse × neglect	1,397	1.65		1,392	0.99		1,389	0.44		1,390	0.08	
Physical abuse × psychological abuse	1,397	0.63		1,392	0.17		1,389	0.61		1,390	0.19	
Physical abuse × neglect	1,397	0.51		1,392	1.61		1,389	0.45		1,390	0.50	
Psychological abuse × neglect	1,397	0.57		1,392	0.73		1,389	0.00		1,390	5.75*	.01

Note. No. = number; Unpro. Sex = unprotected sex. A blank space in the η^2 column indicates no significant variance was explained by the variable.
* $p < .05$.
** $p < .01$.
*** $p < .001$.

controlling for other types of CM. However, because of the multicollinearity of the CM types, we cannot conclude that other types of CM are unrelated to adult sexual risk behavior.

Furthermore, the association between CSA and adult sexual risk behavior was small (as indicated by effect sizes). This is not unexpected because there are many biopsychosocial variables that may influence sexual behavior. For many participants, decades had passed between their sexual abuse and current sexual risk behavior. The largest effect sizes were observed for the number of lifetime partners, which is a cumulative measure of sexual risk across the lifetime; smaller effect sizes were found for recent sexual risk behavior. We interpret these findings to mean that CSA may have an enduring effect on sexual risk behavior but that clinicians working with women with a history of CSA and current sexual risk behavior may need to address additional antecedents of sexual risk to facilitate behavior change.

Second, we did not find support for the additive model of CM effects. Although the count of different types of CM was associated with more lifetime partners, the association was no longer significant after controlling for the effect of CSA. In our data, CSA was confounded with the number of other types of CM reported, with those not experiencing CSA reporting an average of 1.4 other types of CM and those experiencing CSA reporting an average of 2.0 other types of CM. Thus, previous researchers may have found an additive effect of CM on adult sexual risk behavior because the number of types of CM was confounded with CSA.

The third major finding to emerge from this study was that different types of CM experiences did not interact as hypothesized. Indeed, there were few significant interactions. Contrary to expectation, CSA did not interact with other types of CM to result in increased sexual risk behavior. Rather, CSA by itself uniquely predicted sexual risk behavior. This finding is consistent with the traumagenic dynamics framework (Finkelhor & Browne, 1985) and with the differential effects model of CM; however, it is inconsistent with a model of interactive effects. Thus, we found no support for the additive model or for the interactive model of the effects of CM on adult sexual risk behavior. Rather, in this sample, it appeared that most of the association between CM and adult sexual risk behavior was driven by CSA.

Strengths of this study include the large and diverse sample of women and the use of an ACASI survey, which increases rates of reporting of sensitive behaviors (Des Jarlais, Paone, Milliken, & Turner, 1999; Metzger et al., 2000). Six limitations should be noted. First, given the length of time that elapsed between childhood experience and participation in the study, as well as the very sensitive nature of the questions we asked, recall and response biases may have influenced the findings. Second, because of the correlational nature of this study, causal inferences regarding CSA and adult sexual risk behavior are not warranted. Other variables (e.g., family functioning) may influence both CSA and adult sexual behavior. Third, there is no consensus on the definition of CSA or the other CM variables (Haugaard, 2000). The definitions we used may misestimate the relations between CM and adult sexual risk behavior; in addition, the pattern of findings observed here may be due, in part, to the way CM was measured. CSA was measured more completely than the other types of CM, which may have led to differential reporting of CSA relative to other types of maltreatment. Fourth, some findings might reflect Type I error, necessitating replication. Fifth, we did not control for the severity of abuse, which may influence sexual risk behavior outcomes. We classified participants who reported even occasional experiences of physical abuse, psychological abuse, or neglect as maltreated (consistent with any experience of CSA being classified as sexual

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abuse). Therefore, participants with milder experiences of abuse were included in the maltreatment categories, and this may have obscured a relation between more serious experiences of maltreatment and adult sexual risk behavior. Previous studies have found that more severe sexual abuse was associated with greater sexual risk behavior (Senn, Carey, Vanable, Coury-Doniger, & Urban, 2007). Sixth, the study was conducted with women at an STD clinic who had sexual intercourse in the past 3 months. Participants reported high rates of sexual risk behavior and the sample was predominantly low-income and African American. Thus, results may not generalize to other populations of women.

Clinicians who work with women who were sexually abused should be aware that these women may be engaging in sexual behavior that puts them at risk for contracting STDs and HIV. Clinicians should be prepared to discuss current sexual behavior and should help women better protect themselves from STDs and HIV. Clinicians who work in public clinics with women who are engaging in sexual risk behavior should screen for CSA. Clinicians in these settings may be concerned that women may become upset if asked CSA-related questions. We found that women were usually willing to respond to questions about their childhood experiences. We prepared women for these questions, assured them that their responses were confidential, and encouraged them to decline to answer any uncomfortable questions. No adverse events occurred during this research. Clinicians should be prepared to refer women who report CSA experiences for additional treatment, if indicated; in our experience, women were receptive to these referrals.

Research is needed to determine whether sexual risk behavior among women experiencing CSA is best addressed through typical sexual risk reduction interventions, or by addressing the CSA and its psychological sequelae, or a combination of both approaches. Continued development and refinement of empirically validated interventions to reduce sexual risk behavior among women who have been sexually abused are needed.

Declaration of Conflicting Interests

The author(s) declared no conflicts of interest with respect to the authorship and/or publication of this article.

Funding

The author(s) disclosed receipt of the following financial support for the research and/or authorship of this article: National Institutes of Health [grant number R21- MH083502].

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