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Childhood Sexual Abuse and Sexual Risk Behavior Among Men and Women Attending a Sexually Transmitted Disease Clinic

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Abstract

Childhood sexual abuse (CSA) is associated with a wide range of negative outcomes. This study investigated the relation between CSA and sexual risk behavior in 827 patients recruited from an STD clinic. Overall, CSA was reported by 53% of women and 49% of men, and was associated with greater sexual risk behavior, including more sexual partners, unprotected sex, and sex trading. Alcohol use for men, and drug use for women, mediated the relation between CSA and the number of partners in the past three months; intimate partner violence mediated the relation between CSA and the number of episodes of unprotected sex in the past three months for women. These results document the prevalence of CSA among patients seeking care for an STD, and can be used to tailor sexual risk-reduction programs for individuals who were sexually abused.

Keywords

child sexual abuse; sexually transmitted disease; HIV; alcohol use; drug use

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Childhood sexual abuse (CSA) has been reported by approximately 30% of women and 15% of men in national samples (Briere & Elliott, 2003; Finkelhor, Hotaling, Lewis, & Smith, 1990; Vogeltanz et al., 1999), and by 27% of women and 14% of men in a meta-analysis (Rind, Tromovitch, & Bauserman, 1998). Although lifetime prevalence varies across studies depending on methods employed, women tend to report CSA more often than do men (Briere & Elliott, 2003; Finkelhor et al., 1990). Rates of CSA appear to be even higher in population sub-groups, such as pregnant adolescent females (e.g., Boyer & Fine, 1992), adolescents in psychiatric care (e.g., Brown, Kessel, Lourie, Ford, & Lipsitt, 1997) or in detention (e.g., Dembo, Williams, Schmeidler, & Christensen, 1993), men who have sex with men (e.g., Jinich et al., 1998), women who use drugs (e.g., Parillo, Freeman, Collier, & Young, 2001) or are in drug treatment (e.g., El-Bassel, Simoni, Cooper, Gilbert, & Schilling, 2001), and individuals who are HIV positive (e.g., Holmes, 1997).

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CSA has been associated with a variety of adverse sequelae, including engaging in risky sexual behaviors. Individuals who were sexually abused as children report an earlier age of first consensual intercourse (e.g., Wilsnack, Vogeltanz, Klassen, & Harris, 1997), more unprotected sex (e.g., Lodico & DiClemente, 1994), and a greater number of sexual partners (e.g., Greenberg et al., 1999; Holmes, Foa, & Sammel, 2005). Individuals who were sexually abused as children also are more likely to have engaged in commercial sex work (e.g., Kalichman, Gore-Felton, Benotsch, Cage, & Rompa, 2004). A recent meta-analysis concluded that, among women, CSA was associated with unprotected sex, multiple partners, sex trading, and adult sexual revictimization (Arriola, Loudon, Doldren, & Fortenberry, 2005). Individuals who were sexually abused as children are more likely to have an incident STD (e.g., Wingood & DiClemente, 1997), to have a greater number of lifetime STDs (e.g., Greenberg et al., 1999), and to be infected with HIV (e.g., Kalichman et al., 2004).

Miller (1999) proposed a conceptual model to explain the link between CSA and later risky sex. Miller hypothesized that CSA leads to sexual risk behaviors through four mechanisms: (a) using substances to cope with the abuse; (b) mental illness due to the abuse; (c) riskier social networks; and (d) poorer sexual adjustment. Focusing on men who were sexually abused as boys, Purcell, Malow, Dolezal, and Carballo-Diequez (2004) hypothesized that CSA may influence later sexual risk behaviors through mediating variables such as substance use, psychological distress, sexual dysfunction, and revictimization.

Portions of the conceptualizations provided by Miller (1999) and Purcell et al. (2004) have received indirect empirical support. That is, empirical research has linked CSA with each of these proposed mediators, including alcohol (e.g., Bartholow et al., 1994; DiIorio, Hartwell, & Hansen, 2002) and drug use (e.g., Kalichman et al., 2004; Nagy, DiClemente, & Adcock, 1995), substance use before sex (e.g., Lodico & DiClemente, 1994), partner violence (e.g., Cohen et al., 2000; Wingood & DiClemente, 1997), and mental health problems (e.g., Epstein, Saunders, Kilpatrick, & Resnick, 1998; Nagy et al., 1995). Further, each of these proposed mediators have been associated with risky sexual behavior; thus, there is evidence of the substance use—risky sex link [e.g., Fortenberry (1995), George & Stoner (2000), Leigh & Stall (1993)], the link between partner violence and risky sex [e.g., Bauer et al. (2002), Garcia-Moreno, Jansen, Ellsberg, Heise, & Watts (2005), Gilbert, El-Bassel, Schilling, Wada, & Bennet (2000), Testa, VanZile-Tamsen, & Livingston (2005)], and for the depression—risky sex link [e.g., Hallfors, Waller, Bauer, Ford, & Halpern (2005), Hutton, Lyketos, Zenilman, Thompson, & Erbeling (2004)].

Building on these conceptual and empirical foundations, we propose a conceptual framework in which CSA leads to increased alcohol and drug use, partner violence, and depression; these variables, in turn, increase the likelihood of sexual risk behavior. Thus, even though the association between CSA and substance use, mental health, and partner violence is well-documented, most studies have focused on the latter as *outcomes* of CSA, rather than as potential *mediators* of the relation between CSA and risky sexual behavior. The current study advances prior research by examining the mediation of the CSA—risky sexual behavior link. In addition, we hypothesize that the role that these potential mediating variables play will differ for males and females. The majority of studies of CSA have sampled only men or women, precluding gender comparisons. However, findings from several studies indicate that the relation between CSA and potential mediators (i.e., substance use, mental health, and partner violence) differs for men and women. For example, studies have found that CSA is associated with: (a) greater alcohol use for women, but not for men (Brown et al., 1997); (b) drinking before sex for men, but not women (Lodico & DiClemente, 1994); and (c) depression for girls, but not for boys (Nagy, Adcock, & Nagy, 1994). These different patterns of association suggest that gender may be an important moderator of the CSA—risky sexual behavior relationship.

Finally, few studies have investigated CSA among patients attending an STD clinic. This omission is important because adults seeking care for a STD are at disproportionately higher risk of contracting HIV (Weinstock, Dale, Linley, & Gwinn, 2002); in addition, among male STD clinic patients, CSA rates are higher than what is found for the general population (Bartholow et al., 1994; DiIorio et al., 2002; Doll et al., 1992), making it especially important to study CSA in this population.

In summary, the purposes of this study were to determine: (a) rates of CSA among patients at a public STD clinic; (b) whether CSA is associated with sexual risk behavior in this population; (c) what variables mediate the proposed relation between CSA and sexual risk behavior; and (d) whether these mediating variables function in the same way for men and women. We hypothesized that: (a) CSA would be associated with elevated sexual risk behavior; (b) alcohol use, drug use, partner violence, and depression would mediate the relation between CSA and sexual risk behavior; and (c) the effect of the mediating variables would differ by gender.

Methods

Participants

Participants were recruited from a public STD clinic located in Rochester, NY as part of an ongoing randomized controlled trial (RCT; Carey, 2005). Eligibility criteria for the RCT included: age 18 or older; HIV negative; not seen at the clinic in the past 3 months; willing to participate in a standard clinic visit, including an HIV antibody test; and engaged in sexual risk behavior in the past 3 months. Sexual risk behavior was defined as one of the following: having sex with more than one person; being diagnosed with an incident STD in the past 3 months; having a partner who had sex with other people; having a partner who injected drugs; having a partner who was diagnosed with an incident STD in the past 3 months; or having a partner who is HIV positive. Exclusion criteria included using a condom every time with every partner in the past 3 months.

Over the initial of 16 months of the RCT enrollment, 3491 patients were screened; 1573 (45%) met the eligibility criteria, and 871 (55%) completed the survey. Data from participants who did not answer the CSA questions ($n = 7$) or mediator items ($n = 14$), were inconsistent in reporting their sexual behavior ($n = 5$), were outliers on sexual behavior data ($n = 17$; defined as having a studentized deleted residual greater than 4)¹, or were recruited in error ($n = 1$) were eliminated, leaving a final sample size of $N = 827$. Outliers were eliminated because such extreme cases likely are members of a separate, extremely high-risk population, rather than the at-risk population from which the majority of study participants were drawn; thus, these very high-risk participants merit separate investigation (Wegener & Fabrigar, 2000).

The sample was 45% female ($n = 376$); 63% were African-American ($n = 525$) and 26% were Caucasian ($n = 217$). Approximately 50% of the sample was unemployed ($n = 420$), 75% had completed high school ($n = 613$), and 57% earned $\leq \$15,000$ per year ($n = 471$). On average, participants were 29.4 years old ($SD = 9.6$). The men were slightly older than the women at time of survey administration, $t(825) = -3.32, p < .001$; women in the sample were, on average, 28.2 years old ($SD = 8.8$), whereas men were, on average, 30.4 years old ($SD = 10.2$). Men and women also differed in income, with 68% of women earning $\leq \$15,000$ per year ($n = 255$), compared to 48% of men earning $\leq \$15,000$ per year ($n = 216$), $\chi^2(1, N = 827) = 33.21, p < .0001$. There were no gender differences in race/ethnicity, education, or unemployment status. Twenty-eight men (6%) reported having sex with men in the past 3 months.

¹Among the outliers, 15 out of 17 (88%) met criteria for CSA. The number of outliers was too few to permit separate analyses of this sub-group.

Procedure

Patients were called from the waiting room by registration number and escorted to a private exam room by a trained Research Assistant (RA). The RA explained the purpose of the study, and obtained verbal permission to ask a brief series of screening questions to determine eligibility. The study was explained to all patients; patients were informed that all data would be confidential, and protected by a Federal Certificate of Confidentiality. Those who agreed to participate signed an informed consent form, provided contact information, and were asked to complete a calendar of important events over the past 3 months, to help them more accurately respond to survey questions asking about thoughts and behaviors.

All participants then completed an Audio Computer-Assisted Self-Interview (ACASI), a computerized survey that allowed participants to hear a question being read aloud over headphones as they saw the question on the computer screen. ACASI was used to allow patients with limited literacy skills to participate and to obtain high quality data with a private assessment mode (Schroder, Carey, & Venable, 2003). Four sample questions were completed, to familiarize participants with the different response types on the survey. Participants completed the survey in a private exam room, and could buzz the RA if they had any questions; they were paid \$20 for completing the survey. Participants took, on average, 43 minutes ($SD = 14$ minutes) to complete the survey. All procedures were approved by the IRBs of the participating institutions.

Measures

The ACASI survey included measures of demographic characteristics, health behaviors, and psychosocial functioning. For the present study, we used measures that assessed childhood sexual abuse, alcohol use, drug use, intimate partner violence, depression, and sexual behavior.

Demographic characteristics—Participants indicated their sex (male or female), race (recoded as minority vs. Caucasian), and education (re-coded as high school or less vs. more than high school).

Childhood sexual abuse—To assess CSA, we used items adapted from Finkelhor (1979). Participants indicated which sexual activities (e.g., fondling, giving or receiving oral sex, vaginal sex, anal sex) they had experienced: (a) before the age of 13 with someone 5 or more years older; (b) between the ages of 13 and 16 with someone 10 or more years older; and (c) before age 17, where force or coercion was used. For the current study, participants were included in the CSA group if they reported having oral, vaginal, or anal sex before age 13 with someone 5 or more years older, before age 17 with someone 10 or more years older, or before age 17 where force or coercion was used, consistent with previous research including both graded age difference and use of force in the definition of CSA (Finkelhor, 1979).

Alcohol Use Disorders Identification Test (AUDIT; Saunders, Aasland, Babor, de la Fuente, & Grant, 1993)—The AUDIT is a 10-item questionnaire used to assess alcohol use and related problems. Items assess frequency of drinking and binge drinking, and frequency of alcohol-related problems. High AUDIT scores have been associated with harmful alcohol use (Saunders et al., 1993). For the first eight items, scores for each item ranged from 0 to 4; for the last 2 items, a score of 0, 2, or 4 was given, following the instructions in Babor, de la Fuente, Saunders, and Grant (1992). Anchors and midpoints varied for each item. Participants who responded that they never had a drink containing alcohol, and, when probed further, reported not having an alcoholic drink in the past year, were given a score of 0 for all AUDIT items, consistent with established procedures. Internal consistency for the sample was .89.

Drug Abuse Screening Test (DAST; Skinner, 1982)—The DAST is a 10-item instrument assessing drug use and drug-related problems. Participants indicated whether or not (yes or no) they experienced a series of problems related to drug use (e.g., blackouts, family neglect). The DAST is correlated with frequency of drug use in the past 12 months (Skinner, 1982). Yes responses were summed to calculate the total DAST score; one item was reverse-scored, so that yes responses were associated with drug use problems. Participants who reported not using drugs in the past year (other than for medical reasons) were assigned a score of 0 for all DAST items. Internal consistency reliability for the sample was .90.

Co-occurrence of substance use and sex—Participants rated, on a 5-point scale, how often in the past 3 months they drank or used drugs before sex (Carey et al., 1997, 2000), with separate items for drinking and drug use. Responses ranged from “never” (1) to “sometimes” (3) to “almost always” (5). Participants were asked these questions separately for a steady partner (defined as a husband or wife, boyfriend or girlfriend, or a sexual partner the participant really cared about), other (i.e., not a steady) female partner(s), and other male partner(s). To obtain a summary score for drinking (drug use) before sex, ratings of drinking (drug use) before sex were averaged across the three partner types.

Intimate partner violence—Three items assessed partner violence. First, participants were asked if they had been hit, kicked, punched, or otherwise hurt by someone in their lifetime. Second, if they answered yes, they were asked whether the violence was perpetrated by a sexual partner (adapted from Feldhaus et al., 1997). Third, participants were asked whether a partner ever threatened to hurt or kill them, or prevented them from engaging in a variety of activities (adapted from Cohen et al., 2000). If the participant responded affirmatively to either of the last two questions, they were considered to have experienced partner violence.

Center for Epidemiologic Studies Depression Scale (CES-D; Radloff, 1977)—The CES-D measures depressive symptoms in the general population. Scores on the CES-D correlate with other self-report measures of depression and with clinical ratings of depression (Radloff, 1977). We used the 9-item CES-D Short Form, which correlates strongly with the original 20-item CES-D scale (Santor & Coyne, 1997). Participants indicated, on a 4-point scale, how often they experienced a series of depressive symptoms in the past week; responses ranged from “rarely or none of the time (less than 1 day)” (0) to “most or all of the time (5–7 days)” (3). Two items were reverse scored. Internal consistency reliability for the sample was .87.

Sexual behavior—Items developed and tested in previous studies (Carey et al., 1997, 2000, 2004) were used to assess sexual risk behavior. Participants reported the number of male and number of female sexual partners in their lifetime and in the past 3 months, the number of times they exchanged sex for money or drugs, and the number of times they were treated for an STD. Responses were dichotomized for the items assessing sex trading and STD treatment.

To investigate the frequency of sex, participants were asked to report the number of times they had vaginal and anal sex with and without a condom in the past 3 months with their steady partner, with their other female partners, and with their other male partners. Responses were summed to determine the total number of episodes of unprotected vaginal and/or anal sex in the past 3 months (Schroder et al., 2003; Weinhardt, Forsyth, Carey, Jaworski, & Durant, 1998); separate summary scores were calculated for the number of episodes of unprotected sex with each patient’s (a) steady partner, (b) other partner(s), and (c) all partners. These data were also used to calculate the proportion of unprotected sex episodes in the past 3 months ($\#$ unprotected sex episodes $\div$ total $\#$ of sex episodes) overall, with a steady partner, and with other partner(s). Participants who did not report any episodes of vaginal or anal sex in the past

3 months ($n = 25$) were not included in analyses related to the proportion of unprotected sex episodes.

In addition, participants were asked about their most recent sexual experience, including whether this episode was with a steady or other partner; whether they had vaginal sex and, if so, whether a condom was used; and whether they had anal sex and, if so, whether a condom was used. Responses to the most recent sexual experience items indicated whether participants used a condom at last vaginal or anal intercourse (dichotomous), whether participants whose last sexual experience was with a steady partner used a condom (dichotomous), and whether participants whose last sexual experience was with a non-steady partner used a condom (dichotomous).

Analyses

To determine whether CSA was associated with later risky sexual behaviors, we used linear regressions for continuous outcomes, and logistic regressions for dichotomous outcomes. Before conducting these analyses, we transformed data that were non-normal (including number of lifetime sexual partners, skewness = 29.29, kurtosis = 858.42, number of partners in the past 3 months, skewness = 7.75, kurtosis = 80.86; and number of episodes of unprotected vaginal and anal sex in the past 3 months, skewness = 29.43, kurtosis = 866.00) using a $\log^{10}$ transformation to approximate normality (Tabachnick & Fidell, 2001).

To determine which variables mediated the relation between CSA and sexual risk behavior, we conducted a path analysis, with and without mediational paths, to evaluate whether the strength of the direct association between CSA and sexual risk behavior was reduced when mediators were included. In addition, the Sobel test (1982) determined which variables mediated the relation between CSA and sexual risk behavior. For these analyses, CSA was the independent variable; AUDIT score, the co-occurrence of alcohol use and sex, DAST score, the co-occurrence of drug use and sex, partner violence, and CES-D score served as mediators. Mediators were allowed to correlate with each other. Demographic variables that were related to both CSA group and the outcome variable were included in the models.

Two measures of sexual risk were used as outcome variables: the number of partners and the number of episodes of unprotected vaginal and/or anal intercourse (both in the past 3 months). The number of sexual partners was chosen as an outcome because having multiple sexual partners over a relatively short period of time contributes strongly to an individual's risk for STDs (Finer, Darroch, & Singh, 1999; Valois, Oeltmann, Waller, & Hussey, 1999), and because it was hypothesized that recall for this sexual risk variable would be least vulnerable to possible biasing effects of higher frequency sexual events (Schroder et al., 2003). The number of episodes of unprotected sex was chosen as an outcome because it is "the best indicator of risk of sexually transmitted infection inasmuch as it indicates the number of exposures to risk" (Jemmott & Jemmott, 2000, p. 550; see also Jaccard, McDonald, Wan, Dittus, & Quinlan, 2002). The nonsignificant correlation between the number of partners and the number of unprotected sex episodes ($r = .04$) suggests that these two variables merit separate investigation.

To determine whether the mediational relations between CSA and risky sex differed by gender, a multi-group path analysis was conducted, with the model described earlier estimated separately for men and women. Sobel (1982) tests were conducted to determine which variables acted as mediators for men and for women. To determine whether moderated mediation occurred (i.e., to determine whether mediators differed for men and women), path coefficients associated with an individual mediator were constrained to be equal across men and women; a significant worsening of model fit indicated men and women differed in the values of the paths that were constrained. Demographic correlates of CSA group and outcome variable

(determined separately for men and women) were included in the models. Path analyses were conducted using LISREL 8.7 Student version (Joreskog & Sorbom, 2005).

Results

Prevalence of Childhood Sexual Abuse

More than half (51%) of the sample reported a CSA experience ($n = 419$). There was no difference in the percentage of men (49%; $n = 220$) and women (53%; $n = 199$) who reported CSA, $\chi^2(1, N = 827) = 1.41, ns$. Of those who met the criteria for CSA, 207 (49%) reported having oral, vaginal, or anal sex before age 13 with someone 5 or more years older; 284 (68%) reported having sex between the ages of 13 and 16 with someone 10 or more years older; and 209 (50%) reported having a sexual experience before age 17 that involved force or coercion. Among those abused, 213 (51%) met more than one of the study criteria for CSA. The percentage reporting a CSA experience involving force was greater for women (68%; $n = 136$) than it was for men (33%; $n = 73$), $\chi^2(1, n = 419) = 51.67, p < .0001$. In contrast, the percentage reporting a sexual experience before age 13 with someone 5 or more years older was greater for men (54%; $n = 119$) than for women (44%; $n = 88$), $\chi^2(1, n = 419) = 4.07, p < .05$.

Childhood Sexual Abuse and Risky Sexual Behavior

Preliminary analyses determined whether those who were sexually abused as children (CSA group) and those who were not sexually abused as children (non-CSA group) differed on demographic variables (i.e., race and education). Compared to the non-CSA group, the CSA group included a greater percentage of participants of minority race, $\chi^2(1, N = 827) = 27.13, p < .0001$ and a greater percentage of participants who had a high school education or less, $\chi^2(1, N = 827) = 25.16, p < .0001$. Given these associations, subsequent regression analyses controlled for race and education.

CSA and non-CSA groups differed on several sexual behavior outcomes, after controlling for relevant demographic covariates (see Table 1; raw data reported). Those sexually abused as children reported a greater number of lifetime sexual partners, $t(1, 816) = 5.48, p < .0001$, Cohen's $d = 0.384$ Confidence Interval (CI) = 0.246 to 0.522, and a greater number of sexual partners in the past 3 months, $t(1, 820) = 3.64, p < .001, d = .254$, CI = 0.117 to 0.391. In addition, participants with a CSA history were more likely than those who were not abused to report exchanging sex for money or drugs, Wald $\chi^2(1, n = 820) = 36.26, p < .0001$, adjusted odds ratio (AOR) = 3.47, CI = 2.37 to 5.10.

Patients with a CSA history also reported a greater number of episodes of unprotected vaginal and/or anal intercourse during the past 3 months compared to those without a CSA history, $t(1, 821) = 2.05, p < .05, d = 0.143$, CI = .007 to 0.279. Because condom use can differ by partner type, the number of episodes of unprotected sex with steady and with other partners was investigated. Those with a history of CSA reported more episodes of unprotected sex in the past 3 months with a steady partner, $t(1, 614) = 2.02, p < .05, d = .163$, CI = .005 to .321; CSA and non-CSA groups did not differ in the number of episodes of unprotected sex with outside partners. Similarly, CSA participants reported a greater proportion of unprotected sex episodes with a steady partner than did non-CSA participants, $t(1, 606) = 2.83, p < .01, d = 0.230$, CI = 0.071 to 0.389.

The CSA and non-CSA groups did not differ on condom use at last intercourse. However, when investigating condom use by partner type, CSA participants were less likely than non-CSA participants to use a condom at last intercourse with a steady partner, Wald $\chi^2(1, n = 474) = 7.44, p < .01$, AOR = 0.52 CI = .32 to .82. Condom use at last intercourse with an outside partner did not differ.

Not only did the two groups differ in sexual behavior, they also differed in biologic outcomes. Participants who did not experience CSA were less likely (69%) to report a lifetime STD than were participants in the CSA group (83%), Wald $\chi^2(1, N = 827) = 9.28, p < .01$, AOR = 1.64, CI = 1.15 to 2.35.

An abuse (no vs. yes)-by-gender (female vs. male) interaction term was included in all regressions. This term was not significant in any of the regressions.

Mediators of the Relation Between Childhood Sexual Abuse and Sexual Risk Behavior

Number of sexual partners—To determine which variables mediated the relation between CSA and the number of sex partners, a path analysis was conducted on the entire sample (see Figure 1). The demographic covariates (race or education) were not related to either abuse status or the number of partners in the past 3 months; therefore, no covariates were included in the model. Because the model was just identified (i.e., the maximum number of allowable paths, based on the number of measured variables, were included in the model), goodness-of-fit statistics were not obtained.

The variables partially mediated the relation between CSA and the number of partners. When no mediational paths were included, the standardized path coefficient for the relation between CSA and the outcome was .15; when mediators were included, the standardized path coefficient declined to .11. The co-occurrence of alcohol and sex, history of drug use problems (DAST), and the co-occurrence of drug use and sex were all associated with both CSA and the number of sexual partners in the past 3 months. The Sobel test indicated that the co-occurrence of alcohol use and sex (Sobel test = 2.08, $p < .05$), DAST score (Sobel test = 2.31, $p < .05$), and the co-occurrence of drug use and sex (Sobel test = 2.71, $p < .01$) acted as mediators. AUDIT score, partner violence, and CES-D score did not mediate the relation between CSA and the number of sexual partners in the past 3 months in the full model (although AUDIT score did mediate this relation when tested in isolation).

Unprotected sex—A second path analysis was conducted to determine which variables mediated the relation between CSA and the number of episodes of unprotected sex in the past 3 months. Education ($\leq$ high school vs. $>$ high school) was included as a covariate in the model because education was related to both abuse status and the number of episodes of unprotected sex in univariate analyses. The goodness-of-fit indices indicated that the model provided an acceptable fit to the data, $\chi^2(7, N = 827) = 29.42$, AGFI = .95, RMSEA = .062, CFI = .98. However, the relation between CSA and the number of episodes of unprotected sex was weak for the sample as a whole; without mediational paths included, this standardized path coefficient was .03.

Gender and the Relation Between Childhood Sexual Abuse and Sexual Behavior

To determine whether the relations between CSA, the mediators, and risky sex differed for men and women, multi-group path analyses were conducted. Path coefficients first were allowed to vary across men and women; this model was compared to a model in which path coefficients associated with a particular mediator were constrained to be equal for men and women.

Number of sexual partners—For these models, race (minority vs. caucasian) was included as a covariate in the model; race was related to both abuse status and the number of partners in the past three months for men in univariate analyses. Overall, the model fit the data, $\chi^2(14, N = 827) = 69.22$, RMSEA = .095, CFI = .96.

As depicted in Figure 3, the standardized path coefficient from CSA to the number of sexual partners for women was .20 without mediational paths versus .17 when mediational paths were included; for men, the standardized path coefficient from CSA to the number of sexual partners was .11 when no mediational paths were included, and .05 when the mediational paths were included. For women, the co-occurrence of drug use and sex mediated the relation between CSA and the number of partners, Sobel test = 1.97, $p < .05$. For men, the co-occurrence of alcohol use and sex mediated the relation between CSA and the number of sexual partners, Sobel test = 2.09, $p < .05$. (In path analyses where only one mediator at a time was considered, the co-occurrence of drug use and sex for men, and DAST for both men and women, also mediated the relation between CSA and the number of partners.)

To determine whether the coefficients for each of the mediating paths differed between men and women, path coefficients were constrained to be equal across men and women; for example, the path from CSA to AUDIT and the path from AUDIT to the number of sexual partners were both constrained to be equal across men and women. A worsening in model fit with this constraint indicates that the path coefficients differ for men and women. Only mediators that were significant in the full model (i.e., the co-occurrence of alcohol and sex, and the co-occurrence of drug use and sex) or were significant when tested in isolation (i.e., DAST) were considered. Constraining the mediation paths associated with the co-occurrence of drug use and sex to be equal in men and women resulted in a marginal worsening of model fit, $\chi^2_{\Delta} = 5.87$, $df_{\Delta} = 2$, $p < .054$. The co-occurrence of drug use and sex was associated with CSA for both men and women; however, the co-occurrence of drug use and sex was associated with the number of partners only for women. Path coefficients associated with the co-occurrence of alcohol use and sex and DAST score did not differ between men and women.

Unprotected sex—A second set of models investigated gender differences in the relation between CSA and number of episodes of unprotected sex in the past three months. Education was included as a covariate because it was related to both CSA status and the number of episodes of unprotected sex for men. The model provided an adequate fit to the data, $\chi^2(14, N = 827) = 31.74$, RMSEA = .054, CFI = .99.

The relation between CSA and the number of episodes of unprotected sex was partially mediated for women; the standardized path coefficient was .09 with no mediational paths included versus .04 when mediational paths were included (see Figure 4). For women the relation between CSA and the number of episodes of unprotected sex was mediated by partner violence, Sobel test = 2.22, $p < .05$. The relation between CSA and the number of episodes of unprotected sex was nonsignificant for men when no mediators were included (standardized path coefficient = .00; see Figure 4).

To determine whether path coefficients differed between men and women, path coefficients for each of the mediating paths were constrained to be equal across men and women. Only significant mediators (i.e., partner violence) were considered. Constraining the paths from CSA to partner violence and from partner violence to the number of episodes of unprotected sex to be equal in men and women resulted in a significant worsening of model fit, $\chi^2_{\Delta} = 15.84$, $df_{\Delta} = 2$, $p < .001$. Although partner violence was related to CSA for both men and women (with the relationship stronger for women than for men), partner violence was related to the number of episodes of unprotected sex only for women.

Discussion

Five major findings emerged from this research. The first finding is that rates of CSA were alarmingly high in this population of patients attending an STD clinic; specifically, 49% of men and 53% of women reported a sexual abuse experience during childhood. Although it is

difficult to compare these rates with those obtained from studies using different methods, the rates are much higher than the 15% of men and 30% of women reported in national samples (Briere & Elliott, 2003; Finkelhor et al., 1990; Vogeltanz et al., 1999).

There are several possible reasons why the rate of CSA was so high in our sample, relative to the general population. First, it is likely that patients recruited from a public STD clinic, which serves many patients without health insurance or a private physician, have experienced a variety of adverse life events, including CSA. This explanation corroborates results from other studies of men attending an STD clinic in which similarly high rates (25–37%) have been observed (Bartholow et al., 1994; DiIorio et al., 2002; Doll et al., 1992). The rates obtained for women are more difficult to interpret because of the relatively few studies investigating females attending public STD clinics (Thompson, Potter, Sanderson, & Maibach, 1997).

A second explanation for the high CSA rates observed in this study involves the methods of the current study; that is, we used an ACASI survey (completed in a private exam room), which may have led participants to feel more comfortable revealing sensitive information about childhood sexual experiences, which may have led to greater rates of reported CSA. Indeed, prior research suggests that ACASI often results in more reporting of sensitive behaviors (e.g., Des Jarlais et al., 1999; Metzger et al., 2000).

Third, the definition of CSA, which included both age discrepancy and use of force, also may have led to the relatively high rate of CSA reported in this study. If only childhood sexual experiences involving force had been included, the rates of CSA would have been lower (34% of women and 15% of men) and more similar to national prevalence estimates (30% of women and 15% of men). However, studies using both age discrepancy and force in the definition of CSA have found much lower rates of CSA than the present study (e.g., Briere & Elliott, 2003; Vogeltanz et al., 1999). In addition, the definition of CSA we used was relatively strict, in that only sexual experiences involving oral, vaginal, or anal sex were classified as CSA; other studies have included any sexual activity, including kissing or touching, in the definition of CSA (e.g., Briere & Elliott, 2003; Vogeltanz et al., 1999). Research needs to explore which explanation(s) can best account for the high rates of CSA observed in our sample.

A second noteworthy finding was that a similar percentage of men and women reported CSA. This finding contrasts to studies of the general population that have found higher rates of CSA among women than men (Briere & Elliott, 2003; Finkelhor et al., 1990). We did find that women were more likely than were men to report a childhood sexual experience involving force. This finding suggests that men may not perceive childhood sexual experiences with older individuals as necessarily coercive, and extends previous research suggesting that men often do not perceive these childhood sexual experiences as negatively as women do (Rind et al., 1998). Researchers could conduct follow-up qualitative interviews with participants who report a childhood sexual experience with a significantly older partner that does not involve force, to clarify participants' perceptions of these experiences.

A third set of findings was that CSA was associated with sexual behavior in adulthood that puts participants at risk for contracting an STD. Participants who were sexually abused reported a greater number of lifetime sexual partners, a greater number of partners in the past three months, a greater number of episodes of unprotected sex in the past three months, and were more likely to have exchanged sex for money or drugs and to have been diagnosed with an STD. Overall, there was a consistent pattern of riskier sexual behavior among participants with a history of CSA. These findings corroborate results from other studies (e.g., Kalichman et al., 2004; Wingood & DiClemente, 1997), including several that have investigated patients attending STD clinics. In STD clinic samples, CSA has been associated with a variety of risk behaviors and outcomes, including exchanging sex for money or drugs (Bartholow et al.,

1994; DiIorio et al., 2002), having a greater number of partners (DiIorio et al., 2002), and having multiple partners (Thompson et al., 1997). The magnitude of the CSA-risky sex association tends to be modest, consistent with the notion that sexual behavior has many determinants, not just CSA.

The exception to the riskier pattern among CSA patients involved condom use with an outside partner; on this risk marker, CSA patients did not differ from non-CSA patients. One hypothesis for this (non) finding is that all patients, even those with a history of CSA, are more likely to protect themselves in what they perceive to be the riskiest relationships (i.e., sex with casual or non-regular partners). The equivalent rates of condom use for CSA and non-CSA patients in non-regular relationships contrast with condom rates in steady relationships, where patients with a history of CSA were more likely than non-CSA patients to engage in unprotected sex. Thus, CSA survivors may be more vulnerable in primary partnerships where they (especially women) fear partner reprisal (O'Leary, 2000). This hypothesis warrants further study.

The fourth major finding concerns the possible mediators of the CSA-risky sex relationship. Overall, our research partially supported Miller's (1999) and Purcell et al.'s (2004) conceptualization of the association between CSA and risky sex, with substance use and partner violence (for women) mediating the relation between CSA and risky sex. For the sample as a whole, the co-occurrence of alcohol use and sex, drug use, and the co-occurrence of drug use and sex partially mediated the relation between CSA and the number of partners in the last 3 months; thus, CSA was associated with greater substance use and misuse, which, in turn, was associated with having more partners. These findings suggest that CSA increases a person's vulnerability to alcohol and drug abuse, perhaps as a way of coping with the CSA experience or other life stressors (Schumm, Hobfoll, & Keogh, 2004; Wilsnack et al., 1997). This alcohol and drug use may, in turn, lead to a greater number of sexual partners. Consistent with alcohol myopia theory (Steele & Josephs, 1990), alcohol use may lead to risky sexual behavior by reducing information processing capacity, which causes a person under the influence of alcohol to attend to the most immediate cues (e.g., attractive person, sexual arousal, intimacy needs), while reducing a person's capacity to attend to more distal cues (e.g., concerns over pregnancy, HIV or other STDs). Substance use may also be associated with a greater number of sexual partners through sex work, as women and men with few financial resources may exchange sex for money or drugs.

In contrast, substance use did not mediate the association between CSA and the number of unprotected sex acts in the past 3 months. Indeed, for the sample as a whole, none of the variables mediated the association between CSA and unprotected sex. Although all of the mediators were related to CSA, they were not related to the number of episodes of unprotected sex. Clearly, the relationship between substance use and sexual behavior is complex, and requires additional fine-grained (i.e., event-level; Venable et al., 2004; Weinhardt & Carey, 2000) analyses that were not possible with the methods used in this study.

Interestingly, although depression was associated with CSA, depression was unrelated to the number of sexual partners or the number of episodes of unprotected sex; thus, depression did not mediate the relation between CSA and risky sexual behavior. This finding is consistent with recent evidence suggesting that there may be no relation between depression and sexual behavior (Crepaz & Marks, 2001), especially when controlling for other possible determinants of risk behavior. Although we did not find support for the CSA—mental health—risky sex association proposed by Miller (1999) and Purcell et al. (2004), it is important to note that depression is only one aspect of mental health; other mental health markers (or more precise indicators of depression) should be investigated further.

The fifth major finding from this study was that gender moderated the mediated relations between CSA and risky sex. The co-occurrence of drug use and sex mediated the relation between CSA and the number of partners for women, but not for men (i.e., the co-occurrence of drug use and sex related to the number of partners in the past three months only for women). The association between drug use and sex, and the number of partners for women, may be partially explained by the greater percentage of women in the sample who reported exchanging sex for money or drugs.

Additionally, partner violence mediated the association between CSA and the number of episodes of unprotected sex for women only. Although CSA was associated with partner violence for both men and women, partner violence, in turn, was associated with a greater number of unprotected sex acts in the past three months only for women. It is likely that women currently in violent relationships may fear physical harm if they ask their partner to use a condom; individuals who were in violent relationships in the past may have learned that asking their partner to use a condom resulted in physical reprisal and, therefore the behavior of asking a partner to use a condom is suppressed (O'Leary, 2000). Men, who are usually physically stronger, likely are less fearful of physical harm from a partner if they ask to use a condom.

Although the moderated mediation analyses did not find gender differences related to alcohol use, the co-occurrence of alcohol use and sex mediated the relation between CSA and the number of partners for men but not for women. Some studies report gender differences in alcohol expectancy effects, with men who believed that they were drinking alcohol becoming more sexually aroused than men who did not think they were drinking alcohol; these expectancy effects were not found for women (see George & Stoner, 2000, for a review), potentially explaining the association between the co-occurrence of alcohol use and sex and the number of partners.

The findings from this study have several implications. First, health care providers should be aware of the high percentage of STD patients who report being sexually abused as children, and the impact this experience may have on patients' current sexual behavior. Clinicians should question patients about CSA, including whether they were forced or coerced, and be prepared to provide referrals for specialized counseling. Several promising interventions have been developed to promote sexual adjustment and reduce sexual risk among CSA survivors (e.g., Chin, Wyatt, Carmona, Loeb, & Myers, 2004; Spiegel, Classen, Thurston, & Butler, 2004), although these interventions need evaluation and refinement to optimize their efficacy (O'Leary, Koenig, & Doll, 2004).

Second, it may be important to design sexual risk reduction interventions specifically for individuals who have been sexually abused as children. Only limited evidence is available to suggest whether an intervention that emphasizes (a) current sexual risk reduction, or (b) the trauma of the CSA experience, or (c) both the CSA trauma and current sexual risk reduction is the most effective in preventing STDs and HIV. Greenberg (2001) found that an intervention addressing only sexual risk reduction was more effective among individuals with a history of CSA than among non-abused individuals. In an intervention for women infected with HIV, those who participated in a group addressing both CSA trauma and impact as well as sexual risk reduction reported greater reductions in sexual risk behaviors than women in an attention control group (Wyatt et al., 2004). Based on pilot data, Spiegel et al. (2004) concluded that a trauma-focused group for women with CSA may be more effective in reducing HIV-risk behavior than a group focused on present difficulties. Continued exploration of the relative effectiveness, and optimal sequencing, of trauma-focused, sexual risk-reduction-focused, and dual-focused interventions is necessary.

Third, the findings from this study suggest potential intervention content. A trauma-focused intervention might attempt to help participants understand how CSA can lead to substance use to cope with the trauma, and could teach participants coping and harm reduction strategies. Discussion might focus on how CSA can predispose survivors to be more vulnerable to abusive partners, and could include instruction in female-controlled risk reduction methods (O'Leary, 2000), as well as referrals for domestic violence shelters. A safer-sex focused intervention might focus on substance use as a trigger for risky sex, and help participants to develop self-management and problem-solving skills to avoid or manage this trigger. Indeed, initial evidence suggests that alcohol and drug treatment can reduce risky sexual behavior (Avins et al., 1997; Eldridge et al., 1997). The intervention could also include a problem-solving discussion about creative ways to be safer if your partner becomes violent when asked to use a condom.

Fourth, these findings suggest that risk reduction interventions for individuals who were sexually abused should be developed separately for men and women. Due to the sensitive nature of both CSA and sexual behavior, most participants will feel more comfortable in a group with members of the same sex. Furthermore, intervention content should differ for men and women, because different variables mediated the relation between CSA and risky sex for men and women. Women's interventions should emphasize drug use and partner violence, whereas men's interventions should emphasize alcohol use.

The primary limitation of this study is the use of a cross-sectional approach. It is important to note that causality cannot be determined from correlational data. We acknowledge that the variables specified in the model may be correlated through variables that were not included in the model; for example, poor family functioning may lead to CSA, to substance use, and to a greater number of sexual partners. Although the theoretical frameworks proposed by Miller (1999) and Purcell et al. (2004) support the conceptualization of substance use, partner violence, and depression as potential mediators of the relation between CSA and risky sexual behavior, longitudinal research is needed to understand the direction of these associations.

A second limitation involves the measurement of the mediator variables. Although the violence measure we used did not provide detailed information about the nature of the partner violence, previous studies indicate that lifetime history and recent partner violence both correlate with sexual risk behavior and outcomes (e.g., Bauer et al., 2002). In addition, the substance use variables measured global substance use as well as the association between substance use and sex but did not include extensive event-level data. Event-level assessments provide rich data but are difficult to obtain in large field trials (George & Stoner, 2000; Weinhardt & Carey, 2000).

Future investigators may want to employ a structural equation modeling approach to investigating mediators of the relation between CSA and sexual behavior, in which multiple measures of each construct are used. This approach allows researchers to better assess the constructs of interest, and measurement error can be incorporated into the model. However, it may be difficult to create a latent sexual risk behavior construct, because sexual risk behaviors may be unrelated to each other, as was the case with the number of sexual partners and the number of episodes of unprotected sex in the present study. Research should also investigate how changing the definition of CSA (e.g., non-contact CSA vs. CSA where force was used) affects risky sex outcomes and mediators, and explore mediational relations using condom use by partner type as an outcome.

In conclusion, this research indicates that approximately one-half of all male and female patients seeking STD care report a history of CSA and that a history of CSA was associated with increased sexual risk behavior. Moreover, we found that the association between CSA

and sexual risk behavior may be mediated by substance use and intimate partner violence, but that different mechanisms may operate for men and women. Overall, these findings can help to raise awareness regarding CSA, and help to tailor HIV and other sexual risk reduction programs for this vulnerable population sub-group.

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Figure 1.

Path Model Predicting the Number of Sexual Partners in the Past 3 Months

Note: CSA = Child Sexual Abuse; AUDIT = Alcohol Use Disorders Identification Test; DAST = Drug Abuse Screening Test; CES-D = Center for Epidemiologic Studies—Depression Scale. Correlations between mediators not included in path diagram. * $p < .05$. ** $p < .01$. *** $p < .001$.

Figure 2.

Path Model Predicting the Number of Episodes of Unprotected Sex in the Past 3 Months

Note: CSA = Child Sexual Abuse; AUDIT = Alcohol Use Disorders Identification Test; DAST = Drug Abuse Screening Test; CES-D = Center for Epidemiologic Studies—Depression Scale. Correlations between mediators not included in path diagram. * $p < .05$; ** $p < .01$; *** $p < .001$.

Figure 3.

Path Model Predicting the Number of Sexual Partners in the Past 3 Months, By Gender

Note: CSA = Child Sexual Abuse; AUDIT = Alcohol Use Disorders Identification Test; DAST = Drug Abuse Screening Test; CES-D = Center for Epidemiologic Studies—Depression Scale. Correlations between mediators not included in path diagram. * $p < .05$. ** $p < .01$. *** $p < .001$.

Figure 4.

Path Model Predicting the Number of Episodes of Unprotected Sex in the Past 3 Months, by Gender

Note: CSA = Child Sexual Abuse; AUDIT = Alcohol Use Disorders Identification Test; DAST = Drug Abuse Screening Test; CES-D = Center for Epidemiologic Studies—Depression Scale. Correlations between mediators not included in path diagram. * $p < .05$. ** $p < .01$. *** $p < .001$.

Table 1
Sexual Risk Behaviors of Participants Who Reported Childhood Sexual Abuse (CSA) and Those Who Did Not (No CSA)

	<i>M</i>	CSA ^a <i>SD</i>	<i>Range</i>	<i>M</i>	No CSA ^b <i>SD</i>	<i>Range</i>
# lifetime sexual partners ***	58.5	140.5	1–2015	34.1	82.1	1–1006
# sexual partners, 3 months ***	3.3	3.1	1–23	2.5	1.9	1–14
# episodes unprotected sex, 3 months ^{c*}	21.0	31.7	1–300	18.6	28.5	1–308
# episodes unprotected sex, 3 months: steady [*]	23.0	34.0	0–300	20.1	29.5	0–304
# episodes unprotected sex, 3 months: other	4.2	5.2	0–30	4.2	6.4	0–40
proportion unprotected sex, 3 months	0.70	0.31	0.03–1	0.69	0.31	0.02–1
proportion unprotected sex, 3 months: steady ^{**}	0.80	0.29	0–1	0.74	0.33	0–1
proportion unprotected sex, 3 months: other	0.49	0.36	0–1	0.57	0.36	0–1

	<i>n</i>	%	<i>n</i>	%
exchanged sex for money/drugs ***	128	32%	45	12%
ever diagnosed with STD ^{**}	334	83%	263	69%
used condom at last intercourse	95	25%	98	27%
used condom at last intercourse: steady ^{**}	33	15%	58	25%
used condom at last intercourse: other	62	39%	40	29%

Note. CSA = History of Childhood Sexual Abuse; STD = Sexually Transmitted Disease.

^a
n = 419.

^b
n = 408.

^c Because not all participants reported steady and other partners, the total number of episodes of unprotected sex is not the simple sum of episodes of unprotected sex with steady and other partners.

*
p < .05.

**
p < .01.

p < .001.

Table 2
Proposed Mediators of the Relation between CSA and Sexual Risk by CSA Group

	CSA ^a		No CSA ^b	
	<i>M</i>	<i>SD</i>	<i>M</i>	<i>SD</i>
AUDIT (0 – 40)	7.5	8.3	6.2	7.1
Co-Occurrence of Alcohol Use and Sex	2.4	1.3	2.2	1.2
DAST (0 – 10) ^{**}	2.0	2.8	1.3	2.2
Co-Occurrence of Drug Use and Sex [*]	2.2	1.4	1.7	1.1
CES-D (0 – 27) ^{***}	10.5	6.5	8.4	6.2
	<i>n</i>	%	<i>n</i>	%
Partner Violence ^{***}	204	49%	104	25%

Note. CSA = History of Childhood Sexual Abuse; AUDIT = Alcohol Use Disorders Identification Test; DAST = Drug Abuse Screening Test; CES-D = Center for Epidemiologic Studies—Depression Scale.

^a
n = 419.

^b
n = 408.

^{*}
p < .05.

^{**}
p < .01.

^{***}
p < .001