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Impact of Abuse History on Adolescent African-American Women's Current HIV/STD-associated Behaviors and Psychosocial Mediators of HIV/STD Risk

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Abstract

This study examined if relationship power, sex refusal self-efficacy, and/or fear of condom negotiation mediated the relationship between abuse history and consistent condom use (CCU) among African-American female adolescents (n=593). Participants with an abuse history (58%) were less likely to report CCU (p=.003). Women with an abuse history reported less relationship power (p=.006) and self-efficacy for refusing sex (p<.001), and more fear of condom negotiation (p=.003), none of which independently or jointly mediated the association between abuse and CCU. Notably, history of abuse was associated with CCU across mediator models (p=.037 to p=.067), despite inclusion of psychosocial mediators. This study demonstrates the importance of understanding adolescents' condom use behaviors within the context of their life experiences, especially past abuse history.

Keywords

African-American; abuse; condom use; sexually transmitted disease

Abuse, as defined for national surveillance by the National Center for Injury Prevention and Control, includes physical, sexual, and psychological abuse (Leeb, Paulozzi, Melanson, Simon, & Arias, 2008). According to the Centers for Disease Control and Prevention (CDC), there are more than three million reports of abuse perpetrated against children and adolescents each year, with females experiencing higher rates of victimization (CDC, 2010a, 2011; U.S. Department of Health and Human Services, 2010). Racial disparities also exist for the prevalence of child or adolescent abuse, with African-Americans experiencing elevated rates relative to other racial groups (CDC, 2010a). While precise rates are not

known, the CDC estimates that 16.6 per 1,000 African-American children were abused in 2010 (CDC, 2010a).

Abuse experienced during childhood or adolescence may result in a myriad of adverse, enduring psychological and health consequences for victims (Maman, Campbell, Sweat, & Gielen, 2000; Senn, Carey, & Venable, 2008). Experiencing abuse has been associated with engaging in sexual behaviors that increase the risk for sexually transmitted diseases (STD) and human immunodeficiency virus (HIV; Champion, 2011; Hall, Hogben, Carlton, Liddon, & Koumans, 2008; Houck, Nugent, Lescano, Peters, & Brown, 2010). Understanding factors that may underlie the association between abuse history and current sexual risk behaviors among African-American female adolescents is especially important given the elevated STD/HIV rates among this vulnerable population (CDC, 2009, 2010b; Datta et al., 2007). Of particular interest is the extent to which characteristics of adolescents' current intimate partner relationships and their abilities to negotiate condom use with partners may mediate this association (Maman, et al., 2000).

There is a growing body of cross-sectional studies examining the correlation between specific forms of abuse and sexual health among adolescents. Studies have been conducted with high school students (Raj, Silverman, & Amaro, 2000; Testa, Hoffman, & Livingston, 2010), adolescents receiving psychiatric care (Brown, Lourie, Zlotnick, & Cohn, 2000; Houck, et al., 2010) or sexual health services (Champion, 2011; Hall, et al., 2008; Ohene, Halcon, Ireland, Carr, & McNeely, 2005; Raiford, Diclemente, & Wingood, 2009; Sales et al., 2008; Teitelman, Ratcliffe, Morales-Aleman, & Sullivan, 2008; Younge et al., 2010) and among homeless (Johnson, Rew, & Sternglanz, 2006; Noell, Rohde, Seeley, & Ochs, 2001) or incarcerated youth (Mason, Zimmerman, & Evans, 1998; Vermund, Alexander-Rodriguez, Macleod, & Kelley, 1990). A history of sexual abuse has been associated with increased STD incidence (Brown, et al., 2000; Ohene, et al., 2005; Vermund, et al., 1990) and sexual risk behavior engagement including earlier initiation of sexual activity (Mason, et al., 1998; Raj, et al., 2000), greater frequency of unprotected sex (Hall, et al., 2008; Houck, et al., 2010), and having more sexual partners (Champion, 2011; Hall, et al., 2008; Ohene, et al., 2005; Testa, et al., 2010). Additionally, one study found that childhood sexual abuse was associated with greater frequency of sexual coercive experiences during adolescence (Noell, et al., 2001). While the bulk of adolescent studies have examined the relationship between sexual abuse and sexual health, one study found that experiences of intimate partner violence, a form of physical abuse perpetrated by a boyfriend or significant other, were associated with inconsistent condom use (Teitelman, et al., 2008).

While individual types of abuse may occur singly, multiple forms of abuse often co-occur (Champion, 2011). However, few studies have examined sexual, physical, and emotional abuse collectively in their association with sexual health outcomes and behaviors among adolescents. To our knowledge, only two studies have investigated the extent to which sexual, physical, or emotional abuse experienced during childhood affects adolescent risk behavior (Jones et al., 2010; Younge, et al., 2010). In a prospective study, adolescents with a history of childhood sexual abuse engaged in increased HIV risk behaviors (alcohol use and/or sexual initiation before age 14; Jones, et al., 2010). Furthermore, adolescents who experienced sexual abuse *and* physical or emotional abuse engaged in even greater levels of

the two HIV risk behaviors (Jones, et al., 2010). Similarly, Younge and colleagues (2010) found that experiencing any form of abuse (physical, sexual, and/or emotional) was associated with increased sexual risk behaviors among adolescent African American females relative to those who had never been abused. Additionally, young women who had experienced either physical or sexual abuse in combination with emotional victimization engaged in more HIV risk behaviors relative to individuals who had experienced only physical or sexual abuse (Younge, et al., 2010).

A similar pattern of results suggest the deleterious impact of experiencing any form of abuse on subsequent sexual health outcomes among studies conducted with adult samples. For instance, the experience of sexual, physical, or emotional abuse has been associated with greater prevalence of prior STDs among adults (Pettrak, Byrne, & Baker, 2000). Moreover, a second study found that adults with a history of physical or sexual abuse had higher rates of STD reinfection over the course of two years (Champion et al., 2007). Collectively, these studies highlight the need to examine abuse more broadly in relationship to behaviors that increase STD/HIV transmission.

Though evidence generally suggests that experiencing abuse is associated with increased risk for STD acquisition among adolescents (Brown, et al., 2000; Jones, et al., 2010; Ohene, et al., 2005; Vermund, et al., 1990), the mechanisms through which abuse history affects risk for STDs are not fully understood. A behavioral pathway between abuse history and STD acquisition is that of decreased condom use. The reasons suggested for decreased condom use among abused young women vary; however, there is evidence to suggest that abused African-American young women's fear of retaliatory violence or negative partner reactions during condom negotiation decreases their likelihood of using condoms consistently (Raiford, et al., 2009). Such concerns may be particularly salient during adolescence, a developmental period when young women are initiating sexual activity and sexual decision-making.

As articulated in the Theory of Gender and Power, young women tend to have less power to negotiate preventative sexual practices with their male partners (Raiford, Wingood, & DiClemente, 2007; Wingood, Camp, Dunkle, Cooper, & DiClemente, 2009). Young women with a history of abuse may also have lower self-efficacy to refuse unwanted sexual encounters (El-Bassel et al., 1998) and less control in relationships with their male sexual partners (Wingood, DiClemente, & Raj, 2000). Collectively, findings suppose that abuse may affect condom use through mediating factors including fear of condom negotiation, less power in romantic relationships, and lower self-efficacy for refusing unwanted sexual encounters or practices (e.g., unprotected sex). For instance, a recent study by Sales and colleagues (2008) found that partner communication skills partially mediated the relationship between sexual victimization and condom use among African-American young women (Sales et al., 2008). However, the mediated relationship between condom use and *any* type of abuse (i.e., sexual, physical, and/or emotional abuse), as well as the joint mediating role of different dimensions of partner communication has yet to be explored empirically. Thus, the purpose of this study is to explore the independent and joint mediating role(s) of fear of condom negotiation, relationship power, and sex refusal self-

efficacy in the association between history of abuse (i.e., sexual, physical, and/or emotional) and consistent condom use among African-American adolescent women.

Method

Procedures

From June 2005 to June 2007, African-American females, 14 to 20 years of age, were recruited from three sexual health clinics for a randomized controlled trial of an HIV prevention intervention. A young African-American woman recruiter approached young women in the clinic waiting area, described the study, solicited participation, and assessed eligibility. Eligibility criteria included self-identifying as African-American, 14–20 years of age, and reporting vaginal intercourse at least once without a condom in the past 6 months. Young women who were married, currently pregnant, or attempting to become pregnant were excluded from the study. Young women returned to the clinic to complete informed consent procedures, baseline assessments, and be randomized to trial conditions. For the purposes of this study, only baseline data were used in analysis. Written informed consent was obtained from all participants with parental consent waived for those younger than 18 due to the confidential nature of clinic services. Of the eligible women, 94% (N=701) enrolled in the study and completed the baseline assessment. Data on demographic, psychosocial, and behavioral characteristics were collected using an audio computer assisted self-interview (ACASI). Participants were compensated \$75 for travel and childcare to attend intervention sessions and complete the baseline assessment. The Institutional Review Board overseeing the study approved all study protocols.

Measures

History of abuse—Participants were asked three dichotomous questions stating, "Have you *ever* been [emotionally/physically/sexually] abused?" In addition to comparing consistent condom use by type of abuse and combination of types of abuse, a dichotomous composite variable was created in which participants who indicated yes on any of the three items were determined to have a history of abuse, and those who answered no on all of the items were determined to have no history of abuse. The composite variable was used in bivariate and multivariate analyses, as its definition is consistent with that used in national surveillance by the National Center for Injury Prevention and Control, which defines abuse as "words or overt actions that cause harm, potential harm, or threat of harm", including physical, sexual, and psychological abuse (Leeb, et al., 2008, p. 11).

Consistent condom use—The primary behavioral outcome variable, consistent condom use, was defined as use of a condom during *all* vaginal intercourse encounters in the past 90 days. The variable was computed by dividing the self-reported number of condom-protected vaginal sex acts in the past 90 days by the total number of vaginal sex acts; this value was then converted to a percentage representing the proportion of all vaginal sex acts that were protected. Given the markedly skewed distribution and the evidence that it is consistent condom use that is protective, this variable was dichotomized (0 = < 100% inconsistent condom use, 1 = 100% consistent condom use).

Fear of condom negotiation—Eight items measured fear of condom use negotiation (DiClemente et al., 1996; Wingood & DiClemente, 1998; Wingood & DiClemente, 1997a). Participants responded to statements using a 5-point response option ranging from (1) “never” to (5) “always”, with an overall possible scale score ranging from 8 – 40. A sample item included, “I have been worried that if I talked about using condoms with my boyfriend or sex partner he would threaten to leave me.” Cronbach’s alpha, a measure of the scale’s internal consistency, was .87.

Relationship power—Participants’ perceived power in their relationships with male sex partners was assessed using a 17-item scale, a modified and shortened version of Pullerwitz, Gortmaker, and DeJong (2000)’s original measure. Participants responded to statements including, “If I asked my partner to use a condom, he would get violent,” with response options provided on a 4-point scale ranging from (1) “strongly disagree” to (4) “strongly agree”. Overall scale scores range from 4 – 68 with higher scores on this scale representing power imbalances favoring males. Cronbach’s alpha was .56.

Refusal self-efficacy—A 7-item scale examined participants’ self-efficacy to refuse unwanted sexual activity (Zimmerman, Sprecher, Langer, & Holloway, 1995). A sample item is, “How sure are you that you would be able to say NO to having sex with someone who is pressuring you to have sex?” Response options ranged from (1) “I definitely can’t say no” to (4) “I definitely can say no.” Scale scores range from 7 to 28, with higher scores denoting greater refusal self-efficacy. Cronbach’s alpha was .82.

Behavioral and demographic covariates—Participants’ education and employment status, income, and age were collected. Participants reported the highest grade in school they completed; answers were dichotomized by high school graduation status. Employment status was collected with the dichotomous item, “Do you have a job for which you are paid?” Age and weekly personal income were asked in an open-ended format and were assessed as continuous variables.

Having ever used marijuana, alcohol, and/or ecstasy, hereafter called ‘lifetime drug use’, was dichotomized (0=no lifetime drug use; 1=lifetime drug use). Lifetime self-reported history of sexually transmitted diseases was assessed with the yes/no item, “Have you ever had a positive STD test result?” In three open-ended items, women reported their lifetime number of vaginal, oral, and anal sex partners. Because the three items present issues with collinearity in the regression models, the items were summed to give an approximate measure of participants’ total lifetime number of sex partners. Of note, this measure of number of sex partners may be inflated, as some partners were likely involved in more than one type of sex. Nevertheless, the degree to which the measure is inflated should not differ between women with and without a history of abuse and should not impact the findings regarding mediation.

Data Analysis—To isolate the effects of history of abuse, participants (n=108) who reported currently experiencing physical, emotional, and/or sexual abuse (in the past 90 days) were excluded from analyses, leaving a final sample size of n=593. Bivariate comparisons of women with and without a history of abuse were conducted using Mann-

Whitney U-tests and independent samples t-tests for non-normally and normally distributed continuous covariates, respectively. Chi-square tests were used to examine the association between history of abuse and categorical covariates. Demographic, behavioral, and psychosocial variables that were significant at the bivariate level ($p < .05$) were entered as control variables in subsequent models (variables were transformed for normality where necessary).

Single- and multiple-mediator pathways were examined using the *INDIRECT* macro for SPSS developed by Preacher and Hayes (2008) (available at <http://www.afhayes.com/public/indirect.pdf>). The *INDIRECT* macro estimates path coefficients in single- and multiple-mediator models and generates bias-corrected and accelerated bootstrap confidence intervals for total and specific indirect effects of the independent variable on the dependent variable through one or more mediators (Preacher & Hayes, 2008). Consistent condom use was regressed on history of abuse, with fear of condom negotiation, refusal self-efficacy, and relationship power entered in the models. Potential confounders which were significant in bivariate analyses were entered as control variables into the models. Women who did not have sexual intercourse in the past 90 days ($n=35$) were excluded from analysis.

Results

Descriptive Statistics

Table 1 describes the demographic characteristics of the sample ($n=593$) and presents bivariate analyses comparing those with and without an abuse history. On average, women were 17 years of age (standard deviation: 1.7), less than half were employed (35%), and 30% had graduated from high school. Fifty-eight percent reported a history of sexual, physical, and/or emotional abuse (see Table 2). Participants with and without an abuse history did not differ demographically. Participants with a history of abuse reported significantly more lifetime sex partners and more often reported lifetime drug use compared to participants without an abuse history. Lifetime number of sex partners and lifetime drug use were entered as control variables in subsequent analyses; the distribution of lifetime number of sex partners was negatively skewed and was log-transformed for entry into the regression models assessing mediation. Participants with a history of abuse were significantly more likely to report a history of STD infection. Also, compared to participants without a history of abuse, individuals who had been abused reported lower levels of relationship power and sex refusal self-efficacy, and more fear of condom negotiation.

Consistent Condom Use

Participants with a history of abuse reported less consistent condom use in the past 90 days (14.7%) relative to individuals without an abuse history (24.7%; $p=.003$). Several bivariate analyses (χ^2 tests) were performed to compare consistent condom use among different types of abuse,¹ and notably, consistent condom use did not differ by the type of abuse women had experienced. The consistent condom use of women who had experienced emotional, physical, or sexual abuse independently was no different than women with no history of

¹Data are not shown, but are available upon request from the authors.

abuse. When women who had experienced only sexual abuse (e.g. no physical or emotional abuse) were compared to women who had experienced only emotional or physical abuse, there were no significant differences in condom use between the groups. Likewise, women who had experienced physical abuse were no different in their condom use than women who had experienced emotional abuse.

Women who had experienced both emotional *and* physical abuse were less likely to use condoms consistently (10.7%) compared to those who had no history of abuse (24.7%; $p=.003$) and compared to women who had experienced emotional *or* physical abuse (21.1%; $p=.04$). The same synergistic effect was not observed for emotional and sexual abuse, as women who had experienced emotional *and* sexual abuse were no different than those who had no history of abuse or who had experienced emotional or sexual abuse in isolation. Reliable comparisons could not be made involving women who had experienced both physical and sexual abuse due to low frequencies. Women who had experienced emotional, physical, and sexual abuse were significantly less likely to use condoms consistently (10.0%; $p=.007$) than women with no abuse history (24.7%).

Results of mediation analyses

Table 3 displays results from single-mediator analysis. In the logistic regression analysis, a significant direct association existed between history of any type of abuse and condom use (OR: 0.53, 95% CI: 0.34–0.81), and persisted when the control variables (lifetime number of sex partners and lifetime drug use) were included in the model (OR: 0.64; 95% CI: 0.41 – 1.00).

Relationship power—In the model assessing relationship power as a potential mediator, the path from history of abuse to relationship power was in the expected direction but not significant ($\beta = -0.86$, $SE=0.45$, $p=.056$). Similarly, the association between relationship power and CCU was not significant ($\beta = 0.03$, $SE=0.02$, $p=.205$). Though the association between history of abuse and CCU lost statistical significance when relationship power was included as a mediator ($\beta = -0.43$, $SE=0.23$, $p=.065$), the overall indirect effect of history of abuse through relationship power was not significant ($\beta = 0.00$, 95% CI: $-0.12 - 0.01$), controlling for lifetime number of sexual partners and lifetime drug use.

Refusal self-efficacy—History of abuse was significantly associated with refusal self-efficacy in the expected direction ($\beta = -0.86$, $SE=0.30$, $p=.004$), but refusal self-efficacy was not significantly associated with CCU ($\beta = -0.04$, $SE=0.03$, $p=.236$). Despite the inclusion of refusal self-efficacy in the model as a mediator, the association between history of abuse and CCU remained significant ($\beta = -0.48$, $SE=0.23$, $p=.037$), and the overall indirect effect of history of abuse through refusal self-efficacy was not significant ($\beta = 0.00$, 95% CI: $-0.01 - 0.12$), controlling for lifetime number of sexual partners and lifetime drug use.

Fear of condom negotiation—The pathways from history of abuse to fear of condom negotiation and from fear of condom negotiation to CCU were not statistically significant ($p=.255$ and $p=.656$, respectively). The association between history of abuse and CCU neared significance despite inclusion of fear of condom negotiation as a mediator ($\beta = -0.45$,

SE=0.23, $p=.053$). Controlling for lifetime number of sexual partners and lifetime drug use, the indirect effect of history of abuse on CCU through fear of condom negotiation was not statistically significant ($\beta = -0.00$, 95% CI: $-0.08 - 0.01$).

Multiple-mediator models—Results from the multiple-mediator models are displayed in Table 4. Mediation was not present in any of the multiple mediator models. Relationship power, fear of condom negotiation, and refusal self-efficacy were entered into models in each of four possible combinations, controlling for lifetime number of sexual partners and lifetime drug use. In each model, the association between the mediators and CCU was not significant, controlling for confounders (i.e., lifetime number of sex partners and lifetime drug use). Notably, in each of the models, history of abuse reached or neared statistical significance despite the inclusion of mediators.

Discussion

In this sample of African-American young women, participants with a history of abuse were significantly less likely to report consistent condom use in the past 90 days and were marginally more likely to report a lifetime STD history than were young women without a history of abuse. Notably, consistent condom use did not differ substantially by the type of abuse women had experienced. Women who had experienced emotional, physical, or sexual abuse were no different from each other in terms of consistent condom use. While women who had experienced both emotional *and* physical abuse were less likely to use condoms consistently compared to those who had no history of abuse and compared to women who had experienced emotional *or* physical abuse, the same synergistic effect was not observed for emotional and sexual abuse. Thus, according to these findings, the collective experience of emotional, physical, and sexual abuse was unique in the strength of its association with consistent condom use; a finding corroborated by previous studies conducted with adolescents (Jones, et al., 2010; Younge, et al., 2010).

Consistent condom use was infrequent among young women with and without a history of abuse. Some previous studies with African-American women have not found an association between history of abuse and condom use (Parillo, Freeman, Collier, & Young, 2001; Thompson, Potter, Sanderson, & Maibach, 1997); however, the significant association observed in this study is consistent with some previous research conducted with adult (Hall, et al., 2008; Hamburger et al., 2004; Sales, et al., 2008; Wingood & DiClemente, 1997b) and adolescent samples (Younge, et al., 2010). The inconsistency in findings across studies could be due to variation in the degree to which women who are experiencing current abuse were included or excluded in the analyses. Unfortunately, the aforementioned studies failed to specify if those who were currently in abusive relationships were included in the analyses assessing effects of women's previous abuse. The present study excluded young women in ongoing abusive relationships; thus, comparisons of these findings with those of previous studies should be made with caution. Additionally, the present study focused on adolescent African-American women and thus findings from older adult samples may not generalize to younger women.

Young women with a history of any abuse also reported lower levels of power in their relationships and self-efficacy for refusing unwanted sexual encounters. Compared to individuals without a history of abuse, participants who had been abused reported more condom negotiation fears. However, relationship power, sex refusal self-efficacy, fear of condom negotiation, nor any combination thereof served as a mediator in the relationship between abuse history and consistent condom use. The association between abuse history and fear of condom negotiation, relationship power, and refusal self-efficacy observed in this study is corroborated by previous research (El-Bassel, et al., 1998; Kalichman, Williams, Cherry, Belcher, & Nachimson, 1998; Raiford, et al., 2007; Sales, et al., 2008; Thompson, et al., 1997; Wingood, et al., 2009; Wingood & DiClemente, 1997b; Wingood, et al., 2000). The assumption arising from previous research was that a causal pathway existed between abuse and condom use which was mediated by fear of condom negotiation, relationship power, and refusal self-efficacy. The mediation analyses conducted in this study found no evidence of the proposed pathway. However, it should be considered that in the multiple mediator models, one mediating pathway could suppress another, resulting in a potentially inaccurate conclusion that no mediation is present. Nevertheless, history of abuse maintained a strong association with consistent condom use despite the inclusion of control variables and mediators in the model. This finding is notable and underscores the importance of further research into the pathways by which previous abuse affects sexual behaviors, including condom use.

Limitations

The present study is not without limitations. This study is limited by its cross-sectional nature. The data were based on young women's self-reported behaviors and may have been subject to social desirability bias. Also, a number of unmeasured factors, such as duration, severity, frequency, perpetrator characteristics, relationship characteristics where abuse occurred, and time since last experience of abuse, may have confounded or moderated the relationship between abuse and condom use. The measure of abuse was also broad, allowing participants to provide their own definition of abuse history rather than assessing specific behaviors that characterize types of abuse. STD history was assessed via self-report and condom use was examined as a dichotomous measure that does not reflect variability in young women's condom use practices. Additionally, the measure of relationship power was a modified version of the original scale and had low internal consistency; this may have limited the ability to assess the potential mediating role between abuse and condom use. An additional limitation to the study was posed by the strong correlation between the proposed mediators. Correlation between mediators may have suppressed the strength of associations observed in the multiple mediator models (e.g., biased parameter estimates toward the null). However, a composite scale representing all of the proposed mediators as one construct would not be appropriate due to the lower inter-item reliability across all items in the three scales ($\alpha=0.6$). Finally, this sample consisted of urban African-American young women recruited from sexual health clinics; therefore, results may not generalize to other non-clinic recruited female populations.

Conclusions

This study highlights the need for future research to better understand the underlying mechanisms by which prior abuse affects recent sexual behaviors including condom use, particularly among adolescent African-American young women. Furthermore, future research should examine the possibility that a more complex pathway exists between young women's history of abuse and their subsequent sexual risk behavior. While factors explaining this association are not fully understood, the relationship between past abuse and condom use has important intervention and treatment implications. This study extends the current body of research on women's experience of abuse and their subsequent sexual risk behavior by underscoring the relevance of sexual, physical, *and* emotional abuse. The synergistic effect of the three types of abuse has been often ignored by previous research and intervention strategies, which have focused primarily on sexual or physical abuse. Screening for all forms of abuse among young women by clinicians providing reproductive health services to this population offers the potential to ensure young women's safety and also provide referrals for appropriate services (e.g., community based organizations providing abuse-related services, child protective services, mental health treatment). Sexual risk reduction interventions could incorporate content highlighting the prevalence of various forms of abuse among African-American young women. For young women with abuse histories it may be that related psychological sequelae (e.g., PTSD symptoms, depressive symptoms) associated with the past abuse must be addressed as a precursor or in conjunction with content to reduce risk behaviors. However, further research is needed to identify ways to tailor sexual risk reduction interventions to optimize their efficacy for this vulnerable group of young women.

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Table 1

Bivariate comparisons of adolescents with and without a history of abuse (emotional, physical, and/or sexual) on demographic characteristics, attitudes, behaviors, and lifetime history of sexually transmitted infections (N = 593).

	History of Abuse (n=346) N (%)	No abuse history (n=247) N (%)	Test statistic	p-value
Demographic Characteristics				
Graduated from high school	95 (28.9)	81 (34.0)	$\chi^2= 1.72$.190
Currently employed	113 (32.7)	96 (38.9)	$\chi^2= 2.43$.119
Weekly income -mdn (IQR) (n=209)	\$210 (\$123–\$288)	\$182 (\$129–\$287)	$z=0.40$.686
Age – mean (SD)	17.3 (1.7)	17.4 (1.6)	$t=0.63$.528
Behavioral Characteristics				
Consistent condom use in past 90 days (n=558) ²	48 (14.7)	57 (24.7)	$\chi^2= 8.86$.003
Lifetime drug use ³	322 (93.1)	191 (77.3)	$\chi^2= 30.53$	<.001
Lifetime number of sex partners - mdn (IQR)	9.0 (7.8–19.3)	11 (5.3 – 18.0)	$z=3.62$	<.001
Self-reported history of STI ¹	195 (56.4)	119 (48.2)	$\chi^2=3.87$.049
Positive laboratory confirmed test for either trichomonas, chlamydia, or gonorrhea	106 (30.6)	64 (25.9)	$\chi^2=0.30$.583
Psychosocial Characteristics				
Fear of Condom Negotiation - mdn (IQR)	7.0 (7.0 – 8.0)	7.0 (7.0 – 7.0)	$z=2.93$.003
Refusal self efficacy - mdn (IQR)	25.0 (22.0 – 27.0)	26.0 (24.0 – 28.0)	$z=3.60$	<.001
Relationship power - mdn (IQR)	49.0 (46.0 – 53.0)	50.0 (47.0 – 54.0)	$z=2.73$.006

Note: MDN: median; IQR: interquartile range; SD: standard deviation; STI: sexually transmitted infection; IQR: interquartile range;

¹ Includes self-reported infection of trichomonas, chlamydia, gonorrhea, syphilis, genital warts, genital herpes, or 'other';

² 35 women reported no vaginal sex in the past 90 days; consistent condom use is defined as using condoms during 100% of vaginal sex acts in the past 90 days;

³ Includes lifetime use of marijuana, alcohol, or ecstasy

Table 2

Prevalence and age of onset for emotional, physical, and/or sexual abuse among women with a history of abuse (n=346)

	n (%)
Type of abuse	
Emotional only	86 (24.9)
Physical only	17 (4.9)
Sexual only ^I	19 (5.5)
Emotional and physical	108 (31.2)
Emotional and sexual ^I	31 (9.0)
Physical and sexual ^I	4 (1.2)
Emotional, physical, and sexual ^I	81 (23.4)
Age at first abuse	
Emotional - mean (SD; range) (n=306)	12.5(3.8; 1–20)
Physical - mean (SD; range) (n=210)	12.8 (4.0, 1–20)
Sexual - mean (SD; range) (n=135)	12.9 (3.9; 1–19)

Note: SD: standard deviation;

^IIncludes vaginal and/or anal sexual abuse

Table 3

Single-mediator path analyses with fear of condom negotiation, relationship power, and refusal self-efficacy as mediators in the association between abuse history and consistent condom use (n=558)

	β^a	SE of β	<i>p</i> -value
<i>Model with no mediator</i>			
History of abuse → CCU	-.452	.230	.049
<i>Mediator: Relationship Power</i>			
History of abuse → CCU	-.426	.231	.065
History of abuse → Relationship power	-.861	.449	.056
Relationship power → CCU	.029	.023	.205
<i>Total indirect effect^b - β (95% CI)</i>	0.002 (-0.119 – 0.007)		
<i>Mediator: Refusal Self-Efficacy</i>			
History of abuse → CCU	-.483	.232	.037
History of abuse → Refusal self-efficacy	-.862	.298	.004
Refusal self-efficacy → CCU	-.039	.033	.236
<i>Total Indirect Effect^b - β (95% CI)</i>	0.002 (-0.014 – 0.117)		
<i>Mediator: Fear of condom negotiation</i>			
History of abuse → CCU	-.445	.230	.053
History of abuse → FCN	.318	.279	.255
FCN → CCU	-.018	.041	.656
<i>Total Indirect Effect^b - β (95% CI)</i>	-0.003 (-0.077 – 0.014)		

Note. SE: standard error; CCU: consistent condom use; CI: confidence interval; FCN: fear of condom negotiation;

^aUnstandardized parameter estimate for association with consistent condom use;

^bBoot-strap and bias-corrected parameter estimate and bias-corrected and accelerated 95% confidence interval

Table 4

Multiple-mediator path analyses with fear of condom negotiation, relationship power, and refusal self-efficacy as proposed mediators in the association between abuse history and consistent condom use (n=558)

	β^a	SE of β	<i>p</i> -value	Indirect Effect ^d
<i>Model with no mediator</i>				
History of abuse → CCU	-.452	.230	.049*	--
<i>Model 1</i>				
History of abuse	-.423	.231	.067	
Relationship power	.028	.023	.231	-.002 (-.121 – .008)
Fear of condom negotiation	-.008	.041	.852	-.003 (-.122 – .017)
<i>Model 2</i>				
History of abuse	-.476	.232	.040*	
Refusal self-efficacy	-.043	.033	.195	.004 (-.013 – .128)
Fear of condom negotiation	-.028	.043	.512	-.004 (-.078 – .016)
<i>Model 3</i>				
History of abuse	-.459	.233	.049*	
Refusal self-efficacy	-.054	.034	.114	.002 (-.004 – .148)
Relationship power	.039	.024	.105	-.001 (-.119 – .003)
<i>Model 4</i>				
History of abuse	-.455	.233	.051	
Refusal self-efficacy	-.056	.035	.105	.005 (-.011 – .134)
Relationship power	.037	.024	.127	-.002 (-.117 – .006)
Fear of condom negotiation	-.017	.043	.693	-.004 (-.072 – .019)

Note. SE: standard error; CCU: consistent condom use;

^a unstandardized parameter estimate for association with consistent condom use;

^b Boot-strap and bias-corrected parameter estimate and bias-corrected and accelerated 95% confidence interval for indirect effects of history of abuse on consistent condom use through proposed mediator;

* *p*<.05; Lifetime drug use and lifetime total sex partners (log-transformed) included in each model