Published in final edited form as:

AIDS Behav. 2012 May ; 16(4): 999–1010. doi:10.1007/s10461-011-9931-0.

Victimization and Sexual Risk Behavior in Young, HIV Positive Women: Exploration of Mediators

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Abstract

In this study we explore associations between child and adult victimization and sexual risk behavior in 118 young, HIV positive women. Prior research has demonstrated associations between victimization and engagement in sexual risk behavior. Victimization sequelae can include disrupted assertiveness and communication, as well as increased association with risky partners, both of which are also linked with engagement in sexual risk behavior. Thus, we propose a model wherein victimization is linked to sexual risk behavior through two mediating pathways, sexual communication and affiliation with risky partners. We also examine the moderating effects of the presence of an anxiety or depressive disorder on the path from child to adult victimization. Results suggested that adult victimization was associated with unprotected sex with a main partner; however, this association was mediated by less sexual communication and having a risky partner. Trends toward significance were found for depression and anxiety as a moderator of the relationship between child and adult victimization. Child victimization did not have direct effects on unprotected sex. Implications for secondary prevention of HIV and healthy intimate relationships are discussed.

Keywords

Victimization; HIV; Women; Sexual risk

Introduction

The Advancing HIV Prevention Initiative of the Centers for Disease Control and Prevention [1] suggests a major target for prevention is reducing secondary transmission of HIV by decreasing sexual risk in HIV positive persons. Reducing sexual risk behavior in young HIV positive women may result in reduced HIV transmission acquisition of sexually transmitted infections (STIs), and hence better health, for HIV positive women. One important factor related to ongoing engagement in sexual risk behavior, particularly for HIV positive women, is a history of victimization. Studies suggest that the prevalence of child and adult experiences of victimization is high in HIV positive women and adolescents and that a history of violence is associated with engagement in sexual risk behavior. Little is known, however, about pathways linking childhood and adult experience of violence to engagement in sexual risk behavior.

It is well documented that HIV-positive individuals report more traumatic life events than the general population [2]. Rates of abuse, sexual and/or physical, in the general population are estimated at 25% [3], however, rates in HIV positive samples are even greater. In a study of HIV positive women, a lifetime rate of sexual assault was estimated at 43% [4]. In a study of innercity, low income women diagnosed with HIV, 66% were exposed to some type of violence, compared to 40% of a matched comparison group without HIV [5]. A cohort study of HIV positive women and at risk women found that 50% of women reported lifetime rape [6]. Kalichman and colleagues [7] reported that 68% of a community sample of women with HIV reported a lifetime history of at least one sexual assault and were likely to have experienced childhood abuse. In studies of HIV positive women and adolescents, rates of child abuse are approximately 50% [8, 9].

Multiple studies have provided evidence that child abuse experiences are associated with sexual risk behaviors [10–16]. For example, a study of abuse in adolescents demonstrated that physical and sexual abuse was associated with engagement in multiple HIV risk behaviors [11]. In a sample of 3,346 at-risk women, childhood sexual abuse was associated with HIV risk behaviors, including more unprotected sex, more partners, and more sexual activity coupled with substance use [10].

Child and adult victimization may be associated with engagement in risk behavior through a variety of pathways that include individual and partner-based characteristics [17]. In individuals with abuse histories, there is evidence of low assertiveness and poorer communication skills [10, 18–20], which may contribute to unsafe sexual behavior [17]. In support of this, a study of young HIV positive women found that a history of victimization was associated with engagement in sexual risk behaviors, and this relationship was partially mediated by sexual communication [21]. Similarly, a study of high risk, low income African American women found that women with abuse histories were less able to successfully negotiate condom use [22]. There is also evidence that women with abuse histories are more likely to affiliate with risky partners [19, 23] that, in turn, may increase engagement in sexual risk behaviors [23, 24]. Partners of women with abuse histories may be more aggressive, including perpetration of physical and sexual violence, and have a history of more sex partners [23–25]. Additionally, abuse is associated with having a partner who has other sex partners (sexual concurrency), which in turn is associated with sexual risk behavior [23, 26]. Further, there is some evidence that having a risky partner mediates the relationship between abuse and sexual risk behavior [23]. For example, in a community sample of women, the relationship between child sexual abuse and sexually transmitted infections was mediated by risky partner status and partner aggression [23]. These studies point to abuse outcomes such as poorer communication and involvement with risky partners

that may explain the identified relationship between abuse experiences and engagement in sexual risk behavior.

An additional factor that might be important in understanding the relationship between child victimization and engagement in risk behavior is the experience of adult victimization. Adult victimization, like child victimization, has also been linked to risky sexual behaviors, specifically inconsistent condom use and multiple sex partners [27–32]. It has been demonstrated that child victimization is a risk factor for later adult victimization [33, 34]. This later victimization may be important to examine in concert with childhood experiences of victimization when exploring associations with behavioral outcomes such as sexual risk behavior. There is also evidence that adult victimization may, in fact, be a more salient factor than child victimization in relation to sexual risk behavior [35–37]. For example, in women, adult victimization has been shown to mediate the relationship between child victimization and sexual risk behavior [35]. Thus, accumulating evidence supports links between child and adult victimization, and also suggests that adult victimization may play a more salient role in current functioning [36, 37].

Mental health is also important to consider in exploring associations between child victimization and future victimizations [38, 39]. Studies examining symptoms of depression and anxiety in victimized children have shown evidence that these symptoms may be important in increasing risk for adult victimization [40, 41]. For example, posttraumatic stress disorder (PTSD) symptoms were found to mediate the relationship between childhood sexual abuse and revictimization in a cross sectional study of female undergraduates [40]. In a prospective study of sexual revictimization in college women, PTSD was found to moderate the relationship between childhood and adolescent sexual victimization and adult revictimization [39]. A recent study using a national probability household sample of women and prospective methods found that past victimization, PTSD and depressive symptoms were associated with revictimization [41]. Thus, examination of the role of depressive and anxiety disorders in the pathway from child to adult victimization is necessary.

Much of the prior literature focused on victimization and sexual risk behavior is limited by a focus on a single type of victimization, such as child sexual abuse or partner violence; and violence that occurs in one period, such as childhood or adulthood. Methodological critiques of the violence literature suggest the need to expand focus from assessment of a specific type of abuse such as physical or sexual abuse to a more comprehensive assessment of cumulative exposure to violence [36, 42, 43]; as most children exposed to violence are not experiencing a single episode or single type of violence [44]. Research suggests that it is experience of numerous types of victimizations and cumulative exposure, rather than a unique type of violence experienced, that is associated with negative outcomes [44]. In support of examining cumulative exposures, multiple victimizations have been associated with sexual risk behavior over and above single incident victimizations in college women [45]. Further, since child victimization is a risk factor for adult victimization, both should be examined in studies of outcomes.

Understanding the role of child and adult victimization in ongoing sexual risk behavior of HIV positive young women may highlight areas for intervention. Exploration of why and for whom victimization lead to engagement in sexual risk is needed. Sequelae such as poorer communication and affiliation with risky partners have demonstrated links to both victimization and sexual risk behavior [19, 21, 23], thus we propose they may be significant mediators in the path between victimization and sexual risk. Given the research supporting links between childhood victimization and adult victimization, with support for the role of adult victimization on current functioning such as sexual risk behavior [35, 36], we propose

a model whereby child victimization is associated with adult victimization, which in turn is associated with engagement in sexual risk behavior. We also examined the presence of a depressive and anxiety disorder on the path between child and adult victimization, hypothesizing that those mental health symptoms would moderate the association such that those with a history of child victimization and mental health symptoms would be at greater risk for adult victimization. To further parse out why adult victimization may be an important factor in young, HIV positive women's ongoing sexual risk behavior, we focused on two mediators: sexual communication and risky partner status, defined here as perceived sexual partner concurrency. We hypothesized that child victimization would be associated with sexual risk behavior through adult victimization, that an anxiety or depressive disorder would moderate that association, and that the direct effect of adult victimization on sexual risk behavior would be mediated by lowered sexual communication and perceived sexual partner concurrency.

Methods

Participants

One hundred seventy-eight HIV-positive female adolescents and young adults, aged 13–24 who were receiving HIV-related care at Adolescent Trial Network for HIV/AIDS Interventions (ATN) sites in New York City (Montefiore Medical Center, Adolescent AIDS Program), Miami (University of Miami/Jackson Memorial Medical Center), New Orleans (Tulane Medical Center), Chicago (Stroger Hospital of Cook County), and Los Angeles (Los Angeles Children's Hospital, University of Southern California) participated in a larger study of factors influencing care use. Of the 178 participants, 147 completed the 6 month follow up. For the purposes of this study (examining both child and adult exposures to victimization), only participants 18 years and older were included in the analyses, thus, at baseline there were 163 participants 18 and older, and 137 who completed the 6 month follow up. Of the 137 age 18 and over with 6 month follow up data, 19 participants had none of the study measures available, hence we restricted analysis to the remaining 118 participants. Chi square analyses comparing demographic variables at baseline for those retained in the study and those lost to follow up at the 6 month visit yielded no differences. We compared associations between the five sites and our outcome variable of condom use, chi square analyses suggested there were no significant differences in condom use by site.

Procedure

Nurse coordinators informed eligible female participants age 13–24 with non-perinatal, non-transfusion acquired HIV infection of an ongoing study. Informed written consent was obtained from all participants. Participants in the larger study were followed for a period of 18 months. The recruitment period lasted from January 2003 through November 2004, and data collection was finished in May 2006. Approval for study protocol was granted from each institution's human subjects review board. Baseline measures were collected using an extensive audio computer assisted self interview (ACASI) questionnaire. Baseline interviews took from 2–3 hours, with in-person follow up visits at 6, 12 and 18 months lasting approximately 1–2 hours. Participants were compensated 25–\$50 per study visit, according to local site compensation procedures. This study focuses on a subset of participants, age 18–24 years old, who had both baseline and 6 month data. Because we were interested in both exposure to child victimization (less than 18) and adult victimization (18 and older) we only include participants who were 18 and older in this study, resulting in an n of 118. To reduce participant burden, not all questionnaires were assessed at each visit. Thus, in our analyses, demographic assessment, mental health, and victimization variables were measured at baseline. Sexual history and behaviors were only assessed at the 6 month interview. Consequently, our proposed mediators of sexual communication and sexual

concurrency as well as our outcome variable of condom use frequency were assessed at the 6 month visit.

Measures

Child Victimization—Child victimization was assessed with a modified version of the Juvenile Victimization Questionnaire Screener (JVQS) [46, 47]. The JVQS was designed to screen for victimization experiences including physical and sexual abuse, neglect, witnessing violence, and exposure to community violence. The JVQS has been demonstrated to be reliable, with an alpha of 0.80, test retest reliability of 0.59, average kappa of 0.63; and moderate correlations between victimization and trauma symptoms supporting validity [46]. In this study, follow-up questions were not administered on the screener, so caution is advised in interpreting the number of events as a reflection of an actual number of exposures, as there was no additional clarification process that ensures that events were mutually exclusive. A summary score of child victimization experiences prior to age 18 was constructed by summing positive responses to 28 items. Cronbach's alpha for this scale was 0.91. Eighty-nine percent of the sample reported the experience of one or more victimizations. The mean for this scale was 9.30 (SD = 6.40).

Adult victimization—Victimization in adulthood was assessed with seven items from the National Women's Study [48] focused on victimization since the age of 18. Items used behaviorally specific language to assess victimization, and response categories were yes [1] or no (0). Items included personal sexual and physical victimization as well as witnessed victimization. Examples include "Since the age of 18, has anyone used physical force or threat of force to make you have some type of unwanted sexual contact", "Since you were age 18, has anyone (including romantic partners, family members, parents or friends) ever attacked you with a gun, knife, or some other weapon, regardless of whether you ever reported it?" and "Since the age of 18, have you witnessed someone seriously injured or violently killed?". Items were summed to obtain a total score ranging from 0–7. The mean score was 1.20 (SD 1.60), alpha for this scale was 0.72.

Sexual Risk Behavior—Sexual risk behavior was assessed with a modified version of the NIMH Multisite Trial Cooperative Agreement sexual risk assessment [49]. Analyses focused on one main heterosexual partner who was defined as "someone you have sex with and you consider this person to be a person that you are serious about. A main partner is someone with whom you have an ongoing relationship and who you have sex with often—like a spouse, lover, or boyfriend". Participant reports of the frequency of unprotected vaginal or anal sex with their identified main partner in the past 3 months were coded 1 if they reported "always" using a condom or abstinence, 2 if "almost always", 3 "sometimes", 4 "almost never" and 5 if they reported "never" using a condom. Thus, a higher score was defined as increased engagement in unprotected sexual intercourse and considered risky sexual behavior. Previous test–retest coefficients for the sexual behavior items used in the NIMH Multisite trial [49] have been good (range 0.67–0.73). Sexual behavior was assessed at the 6 month interview.

Perceived Sexual Partner Concurrency—Participant reports of their perception of whether their main partner had one or more concurrent sexual partnerships during their relationship was assessed with the modified version of the NIMH Multisite Trial Cooperative Agreement sexual risk assessment [49]. Participants were asked whether they believed their partner had been with other partners since they had been together. Perceived partner concurrency was coded as a 1 and no perceived partner concurrency was coded as 0. Previous test–retest coefficients for the sexual behavior items used in the NIMH Multisite trial have been good (range 0.67–0.73). This item was assessed at the 6 month interview.

Sexual Communication—Sexual communication was comprised of three items from the modified version of the NIMH Multisite Trial Cooperative Agreement sexual risk assessment [49]. Items in this scale included having asked a main partner to use a condom (0 = no, 1 = yes), asking partner his HIV testing status (0 = no, 1 = yes), and discussing partner's HIV status (0 = no, 1 = yes). These items were summed to create a scale ranging from 0–3 where higher scores represented more sexual communication. Alpha for this scale was deemed adequate at 0.62. A meta-analysis of sexual communication indices as they relate to condom use suggested that certain methodological features, such as the coefficient alpha of the communication scale used was not significantly associated with effect size [50]. Sexual communication questions were assessed at the 6 month interview.

Depressive and Anxiety Disorders—The computerized interview version of the NIMH diagnostic interview schedule for children (C-DISC) was used to assess depressive and anxiety disorders. Of the available diagnostic instruments for children and adolescents, the DISC has the most extensive history of development, including four field trials [51]. The DISC is based on DSM-IV criteria for disorders. Reliability studies report moderate test–retest reliabilities [51]. Data was only available to assess the presence or absence of a diagnosis, rather than symptom level data. Given our small sample size and a relatively low base rates of individual disorders assessed, we collapsed the presence of *any* of our specific depressive or anxiety disorders into the presence or absence of a depressive disorder and anxiety disorder. Diagnosis of major depression or dysthymia was used to indicate the presence of a depressive disorder and a positive diagnosis was coded as 1. Diagnosis of anxiety disorder including social phobia, PTSD, OCD, panic disorder, and specific phobia, was used to indicate the presence of an anxiety disorder and coded as 1. Absence of depressive or anxiety disorders was coded as 0.

Analyses

Descriptive statistics (means, standard deviations and percentages) were calculated to describe the sample. Correlations among variables in the hypothesized model were also conducted. Comparisons of different demographic profiles in frequency of unprotected sex with a main partner, child and adult victimization history, partner concurrency and sexual communication were assessed using logistic or linear regressions.

The proposed structural model tests pathways from child victimization to the frequency of unprotected sex with a main partner. We tested mental health diagnosis as a moderator of the association between child and adult victimization, and whether sexual communication and risky partner status, defined as perceived sexual partner concurrency, mediated the association between adult victimization and frequency of unprotected sex with a main partner. We also tested whether there was a direct pathway from child victimization to the frequency of unprotected sex with a main partner. An interaction term was created by multiplying child victimization with the presence of an anxiety or depressive disorder (yes or no) to examine whether these psychological disorders moderated the association between child and adult victimization. To test the hypotheses regarding mediational pathways for frequency of unprotected sex, the significance of the indirect effect through the mediator was determined by Sobel test in Mplus (v. 5.2). The direct and indirect effects of the model were specified by the standardized coefficients in the figures.

Structural equation modeling (SEM) was performed using Mplus (v.5.2). Missing data was handled using full information maximum likelihood (FIML) estimation. Models were estimated using the weighted least-squares with mean and variance adjusted (WLSMV) estimator for categorical outcomes. Model fit was assessed with the Comparative Fit Index (CFI), Tucker Lewis Index (TLI), and Root Mean Square Error of Approximation (RMSEA)

fit indices. Models were deemed to have adequate fit to the underlying data if CFI and TLI statistics were greater than 0.90 and RMSEA statistics were less than 0.08 [52, 53]. All other analyses were performed using SAS (v.9.1).

Results

Table 1 shows the demographic results for the sample. The sample of 118 participants was predominately African American (72.9%), 22.0% reported they were of Hispanic origin, and 5.15% reported other race. Approximately 46% of participants had at least a General Education Diploma (GED) or were high school graduates. Thirty-three percent reported having been homeless at some point in their lives. Fifty-eight percent of women reported always using a condom with their main partner. Table 1 shows the demographic characteristics of the participants and study measures. Correlations among all study variables are displayed in Table 2.

Participants who reported prior homelessness had higher rates of child ($\beta = 6.96$; $P < 0.05$) and adult victimization ($\beta = 1.05$; $P < 0.05$) than those who have never been homeless. There was a statistically significant difference in sexual communication ($\beta = 0.49$; $P < 0.05$) between participants who were of Hispanic origin and those who were not Hispanic, such that Hispanic's reported greater sexual communication. Participants who reported prior homelessness also reported decreased sexual communication ($\beta = -0.44$; $P < 0.05$). Given these associations, both ethnic status and prior homelessness were then included as control variables in all models. We also included age as a control variable for the association between adult victimization and condom use because age is associated with the potential for greater accumulation of victimization events.

Figure 1 shows the results of the full model with depressive disorder as a moderator of the association between child and adult victimization. Results suggested a trend toward significance for the interaction term ($\beta = 0.088$; $P = 0.10$) and an improved model fit (CFI = 0.92; TLI = 0.89; RMSEA = 0.04) compared to the model without the interaction term (CFI = 0.86; TLI = 0.83; RMSEA = 0.07) with 9 degrees of freedom. For participants with a depressive disorder, the rate of adult victimization was increased 0.088, on average, for each unit increase in child victimization compared to those without a depressive disorder. Child victimization was positively associated with adult victimization ($\beta = .089$; $P < 0.05$), independently of the presence of depressive disorder and homeless status. Participants who experienced adult victimization were significantly more likely to report perceived sexual partner concurrency ($\beta = 0.395$, $P < 0.05$) and poorer sexual communication ($\beta = -0.225$, $P < 0.05$) regardless of prior homeless status. In turn, those who reported perceived sexual partner concurrency ($\beta = 0.729$, $P < 0.05$) or poorer sexual communication ($\beta = -0.587$, $P < 0.05$) were more likely to have unprotected sex regardless of ethnic status and years of age. The specific indirect effect of adult victimization on frequency of unprotected sex through perceived sexual partner concurrency and sexual communication was 0.288 (0.395×0.729 ; $P < 0.05$) and 0.132 (-0.225×-0.587 ; $P < 0.05$), respectively. The model accounted for 44% of the variance in frequency of unprotected sex and provided good fit (CFI = 0.92; TLI = 0.89; RMSEA = 0.04).

Figure 2 shows the full model with the presence of an anxiety disorder as a moderator. Results suggest that the presence of an anxiety disorder demonstrated a trend toward moderation on the association between child and adult victimization ($\beta = 0.093$; $P = 0.10$). An improved model fit (CFI = 0.95; TLI = 0.94; RMSEA = 0.03) was achieved relative to the model without the interaction term (CFI = 0.91; TLI = 0.89; RMSEA = 0.05) with 9 degrees of freedom. For participants with an anxiety disorder, the rate of adult victimization was increased 0.093, on average, for each unit increase in child victimization compared to

those without an anxiety disorder. Child victimization was positively associated with adult victimization ($\beta = 0.085$; $P < 0.05$), independently of the presence of anxiety disorder and homeless status. Participants who experienced adult victimization were significantly more likely to report perceived sexual partner concurrency ($\beta = 0.407$, $P < 0.05$) and poorer sexual communication ($\beta = -0.234$, $P < 0.05$) regardless of prior homeless status. In turn, those who reported perceived sexual partner concurrency ($\beta = 0.742$, $P < 0.05$) or poorer sexual communication ($\beta = -0.590$, $P < 0.05$) were more likely to have unprotected sex regardless of ethnic status and years of age. The specific indirect effect of adult victimization on the frequency of unprotected sex through perceived sexual partner concurrency and sexual communication was 0.302 (0.407×0.742 ; $P < 0.05$) and 0.138 (-0.234×-0.590 ; $P < 0.05$), respectively.

In order to test whether there was a direct and an indirect impact of child victimization on the frequency of unprotected sex through adult victimization, perceived sexual partner concurrency and sexual communication, we tested the addition of a path from child victimization to unprotected sex in both models. While perceived sexual partner concurrency and sexual communication mediated the pathways from adult victimization to frequency of unprotected sex, the specific indirect effect of child victimization on unprotected sex through perceived sexual partner concurrency and reduced sexual communication was not statistically significant. The data fit for models with this additional path from child victimization to unprotected sex did not substantively change (CFI = 0.92, TLI = 0.89, RMSEA = 0.04; CFI = 0.89, TLI = 0.83, RMSEA = 0.05, respectively). To achieve the better model fit and in the interest of parsimony, the final model does not include the path from child victimization to unprotected sex.

Discussion

The theoretical model in this study proposed a relationship whereby child and adult victimization history influenced engagement in sexual risk behavior by HIV positive young women indirectly, through association with the proposed mediators of sexual communication and perceived sexual partner concurrency. Further, we examined the moderating role of anxiety and depressive symptoms and child victimization on adult victimization. This study adds to the literature by including exploration of both child and adult victimization experiences, broadening the definition of victimization to include multiple types and cumulative exposure to victimization, and inclusion of mediators between adult victimization and sexual risk behavior in HIV positive young women. Trends toward significance indicated that mental health symptoms such as depression and anxiety may increase risk for adult victimization after child victimization has occurred. We also found support for the mediational role of sexual communication and perceived partner sexual concurrency in the association between adult victimization and condom use. There was no direct association found between child victimization and condom use in our study.

In this study, many participants had experienced multiple forms of victimization in both child and adulthood. The reported frequency of victimizations highlights the need for expanding assessment of violence to capture a clear picture of exposures across time when outcomes such as mental health and behavior are of interest [36, 42, 43]. Our results are consistent with literature examining the salience of adult victimization over child victimization on a variety of outcomes [36, 37, 45], as the direct association of child victimization on condom use was nonsignificant. Our results offer tentative support that mental health symptoms may play a role in the trajectory of victimization, increasing risk for additional victimizations in those who have experienced child victimizations. These findings, while nonsignificant, demonstrate trends in the direction consistent with prior research showing that anxiety and depressive symptoms are important risk factors for

revictimization [41]. Methodological issues such as small sample size may have attenuated our ability to detect a stronger role for mental health symptoms, and while collapsing disorders into categories was necessary for sample size issues this procedure may have obscured associations with particular disorders. There is some evidence suggesting that disorders such as PTSD are perhaps better viewed as a continuum of symptoms rather than discrete diagnostic categories [54], thus our measurement of these variables as a dichotomous presence or absence of a disorder may also have played a role in attenuating our findings. Future studies should use more comprehensive mental health assessments and examine both symptoms and diagnostic categories.

Our results suggest that adult victimization influenced engagement in sexual risk behavior indirectly, through poorer sexual communication and partner concurrency. The effects of adult victimization on sexual risk behavior may be at least partially explained by reduced sexual communication. Young women with more extensive victimization histories may have developed fewer skills for communication, and/or experience more fear or emotional distress associated with communicating about sexual issues with a partner [55]. Child victimization may confer some risk for poorer sexual communication skills [22] that is exacerbated by additional adult victimizations. Those with prior child and adult victimization experiences may require interventions that specifically target communication skills and barriers to communication attempts, such as low self efficacy, fear of partner reactions, or discomfort with intimacy [21, 56]. A meta-analysis of sexual communication as a risk factor for engagement in sexual risk behavior has shown a robust association between sexual communication and sexual risk behavior [50] such as condom use. Our study underscores the importance of sexual communication to sexual risk, and suggests that women with victimization histories may require additional focus on sexual communication to reduce sexual risk. Sexual communication skills for HIV positive women may be complicated by factors such as disclosure status and also gender and power dynamics. Discussion of HIV status or sexual history with main partners may signal self or partner infidelity or bring questions of their own sexual health to the forefront that HIV positive women may prefer to avoid. Thus, a focus on strategies for maintaining sexual safety in the face of these concerns should be included in risk reduction interventions for victimized women.

In this study, the effect of adult victimization on sexual risk behavior was also partly explained by having partners perceived as sexually concurrent or “riskier” partners. Research has shown an increased vulnerability of victimized women to having risky partners, and this in turn is linked to increase risk for unprotected sex, partner violence, and risk for sexually transmitted infections [23]. In this study of HIV positive women, risky partner status partially mediated the relationship between adult victimization and unprotected sex, significantly increasing the risk for participant’s exposure to new STIs, partner exposure to HIV, and also increasing the risk for HIV transmission to other partners outside the dyad. It is possible that stigma or esteem associated both with victimization and HIV infection may play a role in acceptance of partner’s infidelity in ongoing intimate relationships. Similarly, power dynamics may be particularly important for women with victimization histories, and may play a role in type of partner or relationship maintenance. It is also possible that having “riskier” partners signifies a lifestyle vulnerable to exposure to/ engagement in multiple types of risk, an explanation consistent with the concept that risky behaviors cluster together [57, 58]. Thus, in addition to engaging in sexually concurrent partnerships, these partners may be more violent, more difficult to negotiate condom use with, or engender more fear of condom requests [59]. Notably, in women with victimization histories having risky partners mediates lower relationship satisfaction, which may result in higher relationship turnover and increased risk for victimization [23], creating a cycle of

violence and risk behavior that may be an important contributor to secondary transmission of HIV.

While our model provides some insight into mechanisms between victimization and engagement in sexual risk in HIV positive young women, there are additional paths that were not included here that may be relevant. Specific mental health disorders not examined here may be particularly relevant to victimization and behavioral sequelae. Future investigations should include more fine grained assessment of mental health sequelae of victimization, such as PTSD and depression. These disorders have been implicated in future vulnerability to revictimization and to reactions, such as avoidance or fear, that may contribute to reduced ability to negotiate safe sex or affiliation with riskier partners [45, 60]. Other contextual factors, such as substance use by participants or partners could not be examined due to the small sample size of this study, but may be relevant mechanisms associated with victimization and risk behavior and should be included in future investigations with larger sample sizes.

Other limitations of the study include the fact that the assessment of child and adult victimization was retrospective and based on self report. Retrospective reporting of victimization experiences is a limitation of much of the victimization literature. However, of the prospective studies conducted, associations suggest that retrospective reporting of victimization is a valid assessment method [61, 62] and likely captures 80 to 90% of cases [63]. Additionally, participants were asked only about their perceptions of their main partner's sexual concurrency, as such, this variable could reflect current functioning related to victimization experiences, such as a belief that one has an untrustworthy partner [64]. Alternatively, research suggests that women tend to underestimate partner concurrency although predictions are improved with intimacy and length of the relationship [65]. Future research should include partner reports of concurrency in addition to perceived concurrency. Similarly, our measure of sexual behavior was self report and did not include either partner corroboration or a more objective measure of sexual risk, such as acquisition of a sexually transmitted infection.

The cross sectional nature of the data also limits our ability to understand the causality of the relationships we describe, and it may be that there is reciprocity between some of these proposed factors, such as attempts at condom use and increased risk for victimization [30], that require longitudinal models for full examination. In addition, the small sample size may have limited our ability to detect important relationships. The "rule of thumb" of including ten participants per indicator suggests that our power to detect relationships was adequate based on sample size [66]. Further, smaller sample sizes of around 100, particularly with populations that may be hard to reach, are viable for use with SEM strategies [67]. However, numerous articles suggest that larger samples are necessary to retain confidence in the research results (e.g., [68, 69]). We encourage additional work on this topic with larger samples, multiple indicators to describe latent variables, and longitudinal methods.

The study contributes to the literature by broadening the measurement of victimization beyond a single type and single period of victimization to exposure to cumulative victimization. It also makes inroads into explaining some of the mechanisms between the experience of victimization and engagement in risk behavior in HIV positive young women. Identification of mediators is important because it allows for targeting points of intervention. Identifying and assisting young HIV positive women with victimization histories is important to reducing ongoing engagement in sexual risk behavior which may contribute to the spread of HIV to immediate sexual partners and beyond, to future or concurrent partners. This study suggests that interventions should focus on bolstering skills for sexual communication with partners, including negotiation of condom use, skills for abstaining or

refusal if condom use is not acceptable, and skills for initiating a discussion of sexual history such as HIV and other sexually transmitted infections. It is important to consider that many women may be negotiating in a context of relationship violence, and interventions targeting communication skills should consider the potential for violence into account and include specific strategies to maximize safety. Helping young women anticipate negative partner responses such as questions of fidelity when condom use and sexual history are discussed, and generating ways to respond to partner reactions, may also be of use. Several efficacious interventions for at risk women or HIV positive women incorporate communication strategies and have demonstrated reductions in sexual risk behavior [70, 71], and could be tailored to address specific needs of women with victimization histories who may have poorer negotiation or communication skills, or are experiencing violence in their relationships. A group intervention focused on coping for HIV positive men and women with child sexual abuse histories has also demonstrated reductions in risk behavior across several dimensions [72]. Women with victimization histories should be assisted with identifying what they want in an intimate partner and relationship, perhaps addressing cognitive schemas around intimacy, attraction to riskier partners, or the influence of stigma related to the experience of victimization and HIV. Focus on relationships and identification of appropriate partners has been a component of efficacious interventions to reduce risk behavior in HIV positive populations [73] (eg., WILLOW), although whether these intervention components served as important mediators of the intervention effects has not been determined. None the less, secondary prevention efforts could focus on relationship issues and partner selection with attention to the needs of women with victimization histories, perhaps highlighting cognitive and or contextual vulnerabilities to engagement with risky partners. In sum, there are existing intervention components known to reduce sexual risk behavior including unprotected sex and sex with riskier partners that could be utilized to target HIV positive women with victimization histories and reduce the risk of secondary transmission.

This study underscores the need to address the underlying causes of HIV transmission risk, specifically experiences of victimization. Primary prevention of childhood victimization is an important strategy for reducing mental health sequelae, adult victimization, and HIV risk behaviors. Individual, school based, and community level interventions should be considered in prevention of child victimization and the cascade of potential consequences of that victimization. Promising programs include the Nurse Family Partnership, which targets young mothers to help them develop the skills and social networks necessary to enrich parenting of infants and young children, and has demonstrated reductions in attitudes and risk factors that may increase abuse and neglect [74, 75]. In addition to primary prevention strategies, interventions should focus on decreasing risk and improving quality of life for HIV positive young women with victimization histories, and the salience of their intimate relationships to both of these goals should not be underestimated; our study highlights possible mediators that may assist in this effort.

Acknowledgments

This study was funded by grant No. 5-K01MH070278 from the National Institutes of Health through the National Institute of Mental Health (G. Clum). Additional funding and support was provided by The Adolescent Trials Network for HIV/AIDS Interventions (ATN) which is funded by grant No. U01 HD40533 from the National Institutes of Health through the National Institute of Child Health and Human Development (A. Rogers, R. Nugent, L. Serchuck), with supplemental funding from the National Institutes on Drug Abuse (N. Borek), Mental Health (A. Forsyth, P. Brouwers), and Alcohol Abuse and Alcoholism (K. Bryant). We acknowledge the contribution of the investigators and staff at the following ATN sites that participated in this study: Montefiore Medical Center, Bronx, NY (D. Futterman, E. Enriquez-Bruce, M. Campos); University of Miami School of Medicine, Division of Adolescent Medicine, Miami, FL (L. Friedman, D. Maturo, H. Major Wilson); Children's Hospital of Philadelphia, Philadelphia, PA (B. Rudy, M. Tanney, N. Seth). The study was scientifically reviewed by the ATN's scientifically reviewed by the ATN's Behavioral Leadership Group. Network scientific and logistical support was provided by

the ATN Coordinating Center (C. Wilson, C. Partlow), at University of Alabama at Birmingham. Network operations and analytic support was provided by the ATN Data and Operations Center at Westat, Inc. (J. Ellenberg, K. Joyce, J. Davidson, R. Mitchell). The investigators are grateful to the members of the ATN Community Advisory Board for their insight and counsel and are particularly indebted to the youth who participated in this study.

References

- Centers for Disease Control. Advancing HIV prevention: new strategies for a changing epidemic—United States. *Morbidity and Mortality Weekly Report*. 2003; 52(15):329.
- Gore-Felton C, Koopman C. Traumatic experiences: harbinger of risk behavior among HIV-positive adults. *J Trauma Dissociation*. 2002; 3(4):121–35.
- Polusny MA, Follette VM. Long-term correlates of child sexual abuse: theory and review of the empirical literature. *Appl Prev Psychol*. 1995; 4(3):143–66.
- Zierler S, Witbeck B, Mayer K. Sexual violence against women living with or at risk for HIV infection. *Am J Prev Med*. 1996; 12(5):304–10. [PubMed: 8909637]
- Kimerling R, Armistead L, Forehand R. Victimization experiences and HIV infection in women: associations with serostatus, psychological symptoms and health status. *J Trauma Stress*. 1999; 12(1):41–58. [PubMed: 10027141]
- Zierler S, Feingold L, Laufer D, Velentgas P. Adult survivors of childhood sexual abuse and subsequent risk of HIV infection. *Am J Public Health*. 1991; 81(5):572–5. [PubMed: 2014856]
- Kalichman SC, Weinhardt L, DiFonzo K, Austin J, Luke W. Sensation seeking and alcohol use as markers of sexual transmission risk behavior in HIV-positive men. *Ann Behav Med*. 2002; 24(3):229–35. [PubMed: 12173680]
- Pao M, Lyon M, D'Angelo LJ, Schuman WB, Tipnis T, Mrazek DA. Psychiatric diagnoses in adolescents seropositive for the human immunodeficiency virus. *Arch Pediatr Adolesc Med*. 2000; 154(3):240–4. [PubMed: 10710020]
- Simoni JM, Ng MT. Trauma, coping and depression among women with HIV/AIDS in New York city. *AIDS Care*. 2000; 12(5):567–80. [PubMed: 11218543]
- NIMH multisite HIV prevention trial. a test of factors mediating the relationship between unwanted sexual activity during childhood. *Women Health*. 2001; 33(1–2):163.
- Cunningham RM, Stiffman AR, Doré P, Earls F. The association of physical and sexual abuse with HIV risk behaviors in adolescence and young adulthood: implications for public health. *Child Abuse Negl*. 1994; 18(3):233–45. [PubMed: 8199905]
- El-Bassel N, Gilbert L, Rajah V, Foleno A, Frye V. Fear and violence: raising the HIV stakes. *AIDS Educ Prev*. 2000; 12(2):154–70. [PubMed: 10833040]
- Elze DE, Auslander W, McMillen C, Edmond T, Thompson R. Untangling the impact of sexual abuse on HIV risk behaviors among youth in foster care. *AIDS Educ Prev*. 2001; 13(4):377–89. [PubMed: 11565596]
- Kalichman SC, Williams EA, Cherry C, Belcher L, Nachimson D. Sexual coercion, domestic violence, and negotiating condom use among low-income African American women. *J Women Health*. 1998; 7(3):371–8.
- Orr ST, Celentano DD, Santelli J, Burwell L. Depressive symptoms and risk factors for HIV acquisition among Black women attending urban health centers in Baltimore. *AIDS Educ Prev*. 1994; 6(3):230–6. [PubMed: 8080707]
- Wingood GM, DiClemente RJ. Rape among African American women: sexual, psychological, and social correlates predisposing survivors to risk of STD/HIV. *J Women Health*. 1998; 7(1):77–84.
- Logan TK, Cole J, Leukefeld C. Women, sex, and HIV: social and contextual factors, meta-analysis of published interventions, and implications for practice and research. *Psychol Bull*. 2002; 128(6):851–85. [PubMed: 12405135]
- DiLillo D, Long PJ. Perceptions of couple functioning among female survivors of child sexual abuse. *J Child Sex Abuse*. 1999; 7(4):59–76.
- DiLillo D. Interpersonal functioning among women reporting a history of childhood sexual abuse: empirical findings and methodological issues. *Clin Psychol Rev*. 2001; 21(4):553–76. [PubMed: 11413867]

20. Mullen PE, Martin JL, Anderson JC, Romans SE. The effect of child sexual abuse on social, interpersonal and sexual function in adult life. *Br J Psychiatr.* 1994; 165(1):35–47.
21. Sales JM, Salazar LF, Wingood GM, DiClemente RJ, Rose E, Crosby RA. The mediating role of partner communication skills on HIV/STD-associated risk behaviors in young African American females with a history of sexual violence. *Arch Pediatr Adolesc Med.* 2008; 162(5):432–8. [PubMed: 18458189]
22. Perrino T, Fernández MI, Bowen GS, Arheart K. Low-income African American women's attempts to convince their main partner to use condoms. *Cult Divers Ethnic Minor Psychol.* 2006; 12(1):70–83.
23. Testa M, VanZile-Tamsen C, Livingston JA. Childhood sexual abuse, relationship satisfaction, and sexual risk taking in a community sample of women. *J Consult Clin Psychol.* 2005; 73(6):1116–24. [PubMed: 16392972]
24. Whitmire, LE.; Harlow, LL.; Quina, K.; Morokoff, PJ. Childhood trauma and HIV: women at risk. Philadelphia: Brunner/Mazel; 1999.
25. He H, McCoy HV, Stevens SJ, Stark MJ. Violence and HIV sexual risk behaviors among female sex partners of male drug users. *Women Health.* 1998; 27(1–2):161–75. [PubMed: 9640640]
26. Gyarmathy VA, Neaigus A. The relationship of sexual dyad and personal network characteristics and individual attributes to unprotected sex among young injecting drug users. *AIDS Behav.* 2009; 13(2):196–206. [PubMed: 17690975]
27. Coker AL. Does physical intimate partner violence affect sexual health? *Trauma. Violence Abuse.* 2007; 8(2):149–77.
28. Collins RL, Ellickson PL, Orlando M, Klein DJ. Isolating the nexus of substance use, violence and sexual risk for hiv infection among young adults in the United States. *AIDS Behav.* 2005; 9(1):73–87. [PubMed: 15812615]
29. El-Bassel N, Gilbert L, Wu E, Go H, Hill J. HIV and intimate partner violence among methadone-maintained women in New York City. *Soc Sci Med.* 2005; 61(1):171–83. [PubMed: 15847970]
30. Lang DL, Salazar LF, Wingood GM, DiClemente RJ, Mikhail I. Associations between recent gender-based violence and pregnancy, sexually transmitted infections, condom use practices, and negotiation of sexual practices among HIV-positive women. *J Acquir Immune Defic Syndr.* 2007; 46(2):216–21. [PubMed: 17693895]
31. Littleton H, Radecki Breitkopf C, Berenson A. Sexual and physical abuse history and adult sexual risk behaviors: relationships among women and potential mediators. *Child Abuse Negl.* 2007; 31(7):757–68. [PubMed: 17631958]
32. Tucker JS, Wenzel SL, Elliott MN, Hambarsoomian K. Predictors of unprotected sex with non-cohabitating primary partners among sheltered and low-income housed women in Los Angeles county. *J Health Psychol.* 2006; 11(5):697–710. [PubMed: 16908467]
33. Finkelhor D. The trauma of child sexual abuse: two models. *J Interpers Violence.* 1987; 2(4):348–66.
34. Livingston JA, Testa M, VanZile-Tamsen C. The reciprocal relationship between sexual victimization and sexual assertiveness. *Violence Against Women.* 2007; 13(3):298–313. [PubMed: 17322273]
35. Senn TE, Carey MP, Vanable PA, Coury-Doniger P, Urban MA. Childhood sexual abuse and sexual risk behavior among men and women attending a sexually transmitted disease clinic. *J Consult Clin Psychol.* 2006; 74(4):720–31. [PubMed: 16881780]
36. Banyard VL, Williams LM, Saunders BE, Fitzgerald MM. The complexity of trauma types in the lives of women in families referred for family violence: multiple mediators of mental health. *Am J Orthopsychiatr.* 2008; 78(4):394–404.
37. Gidycz CA, Hanson K, Layman MJ. A prospective analysis of the relationships among sexual assault experiences: an extension of previous findings. *Psychol Women Q.* 1995; 19(1):5–29.
38. Classen CC, Palesh OG, Aggarwal R. Sexual revictimization: a review of the empirical literature. *Trauma Violence Abuse.* 2005; 6(2):103–29. [PubMed: 15753196]
39. Sandberg DA, Matorin AI, Lynn SJ. Dissociation, posttraumatic symptomatology and sexual revictimization: a prospective examination of mediator and moderator effects. *J Trauma Stress.* 1999; 12(1):127–38. [PubMed: 10027147]

40. Arata CM. From child victim to adult victim: a model for predicting sexual revictimization. *Child Maltreat.* 2000; 5(1):28–38. [PubMed: 11232060]
41. Cogle JR, Resnick H, Kilpatrick DG. A prospective examination of PTSD symptoms as risk factors for subsequent exposure to potentially traumatic events among women. *J Abnorm Psychol.* 2009; 118(2):405–11. [PubMed: 19413414]
42. Saunders BE. Understanding children exposed to violence: toward an integration of overlapping fields. *J Interpers Violence.* 2003; 18(4):356–76.
43. Turner RJ, Lloyd DA. Lifetime traumas and mental health: the significance of cumulative adversity. *J Health Soc Behav.* 1995; 36(4):360–76. [PubMed: 8719054]
44. Finkelhor D, Ormrod RK, Turner HA. Polyvictimization and trauma in a national longitudinal cohort. *Dev Psychopathol.* 2007; 19(1):149–66. [PubMed: 17241488]
45. Green BL, Krupnick JL, Stockton P, Goodman L, Corcoran C, Petty R. Effects of adolescent trauma exposure on risky behavior in college women. *Psychiatr Interpers Biol Process.* 2005; 68(4):363–78.
46. Finkelhor D, Hamby SL, Ormrod R, Turner H. The juvenile victimization questionnaire: reliability, validity, and national norms. *Child Abuse Negl.* 2005; 29(4):383–412. [PubMed: 15917079]
47. Hamby, SL.; Finkelhor, D.; Ormrod, RK.; Turner, HA. The juvenile victimization questionnaire (jvq): administration and scoring manual. Durham: Crimes Against Child Res Center; 2004.
48. Kilpatrick, DG.; Resnick, HS.; Saunders, BE.; Best, CL. The national women's study PTSD module. 1989.
49. NIMH Multisite HIV Prevention Trial. Demographic and behavioral predictors of sexual risk in a multisite HIV prevention trial. *AIDS.* 1997; 11(2):S21–7.
50. Noar SM, Carlyle K, Cole C. Why communication is crucial: meta-analysis of the relationship between safer sexual communication and condom use. *J Health Commun.* 2006; 11(4):365–90. [PubMed: 16720536]
51. Shaffer D, Fisher P, Lucas CP, Dulcan MK, Schwab-Stone ME. NIMH diagnostic interview schedule for children version IV (NIMH DISC-IV): description, differences from previous versions, and reliability of some common diagnoses. *J Am Acad Child Adolesc Psychiatr.* 2000; 39(1):28–38.
52. Browne, MW.; Cudeck, R. Alternative ways of assessing model fit. In: Bollen, KA.; Long, JS., editors. *Testing structural equation models.* Newbury Park: Sage Publications; 1993. p. 136–62.
53. Hu L-T, Bentler PM. Cutoff criteria for fit indexes in covariance structure analysis: conventional criteria versus new alternatives. *Struct Equ Model.* 1999; 6(1):1–55.
54. Ruscio AM, Ruscio J, Keane TM. The latent structure of post-traumatic stress disorder: a taxometric investigation of reactions to extreme stress. *J Abnorm Psychol.* 2002; 111(2):290–301. [PubMed: 12003450]
55. Briere J, Jordan CE. Childhood maltreatment, intervening variables, and adult psychological difficulties in women: an overview. *Trauma Violence Abuse.* 2009; 10(4):375–88. [PubMed: 19776086]
56. Feiring C, Simon VA, Cleland CM. Childhood sexual abuse, stigmatization, internalizing symptoms, and the development of sexual difficulties and dating aggression. *J Consult Clin Psychol.* 2009; 77(1):127–37. [PubMed: 19170459]
57. Capaldi DM, Stoolmiller M, Clark S, Owen LD. Heterosexual risk behaviors in at-risk young men from early adolescence to young adulthood: prevalence, prediction, and association with STD contraction. *Dev Psychol.* 2002; 38:394–406. [PubMed: 12005382]
58. Jessor, R.; Shirley, LJ. Problem behavior and psychosocial development: a longitudinal study of youth. 1977.
59. Amaro H. Love, sex, and power: considering women's realities in HIV prevention. *Am Psychol.* 1995; 50(6):437–47. [PubMed: 7598292]
60. Clum GA, Andrinopoulos K, Muessig K, Ellen JM. Child abuse in young, HIV-positive women: linkages to risk. *Qual Health Res.* 2009; 19(12):1755–68. [PubMed: 19949224]
61. Widom CS, Shepard RL. Accuracy of adult recollections of childhood victimization: Part 1 childhood physical abuse. *Psychol Assess.* 1996; 8(4):412–21.

62. Williams LM. Recall of childhood trauma: a prospective study of women's memories of child sexual abuse. *J Consult Clin Psychol.* 1994; 62(6):1167–76. [PubMed: 7860814]
63. DiLillo D, Fortier MA, Hayes SA, Trask E, Perry AR, Messman-Moore T, et al. Retrospective assessment of childhood sexual and physical abuse: a comparison of scaled and behaviorally specific approaches. *Assessment.* 2006; 13(3):297–312. [PubMed: 16880281]
64. Wenninger K, Ehlers A. Dysfunctional cognitions and adult psychological functioning in child sexual abuse survivors. *J Trauma Stress.* 1998; 11(2):281–300. [PubMed: 9565916]
65. Lenoir CD, Adler NE, Borzekowski DLG, Tschann JM, Ellen JM. What you don't know can hurt you: perceptions of sex-partner concurrency and partner-reported behavior. *J Adolesc Health.* 2006; 38(3):179–85. [PubMed: 16488813]
66. Nunnally, JC. *Psychometric Theory.* NY: McGraw Hill; 1967.
67. Gignac GE. Self-reported emotional intelligence and life satisfaction: testing incremental predictive validity hypotheses via structural equation modeling (SEM) in a small sample. *Pers Individ Differ.* 2006; 40(8):1569–77.
68. MacCallum RC, Austin JT. Applications of structural equation modeling in psychological research. *Annu Rev Psychol.* 2000; 51:201–26. [PubMed: 10751970]
69. Westland C. Lower bounds on sample size in structural equation modeling. *Electron Commer Res Appl.* 2010; 9(6):476–87.
70. Morin SF. Effects of a behavioral intervention to reduce risk of transmission among people living with HIV: the healthy living project randomized controlled study. *J Acquir Immune Defic Syndr.* 2007; 44(2):213–21. [PubMed: 17146375]
71. Kalichman SC, Rompa D, Cage M. Group intervention to reduce HIV transmission risk behavior among persons living with HIV/AIDS. *Behav Modif.* 2005; 29(2):256–85. [PubMed: 15657411]
72. Sikkema KJ, Hansen NB, Kochman A, Tarakeshwar N, Neufeld S, Meade CS, et al. Outcomes from a group intervention for coping with HIV/AIDS and childhood sexual abuse: reductions in traumatic stress. *AIDS Behav.* 2007; 11(1):49–60. [PubMed: 16858634]
73. DiClemente RJ, Wingood GM, Harrington KF, Lang DL, Davies SL, Hook EW, et al. Efficacy of an HIV prevention intervention for African American adolescent girls a randomized controlled trial. *J Am Med Assoc.* 2004; 292(2):171–9.
74. Kitzman H, Yoos HL, Cole R, Korfmacher J. Prenatal and early childhood home-visitation program processes: a case illustration. *J Community Psychol.* 1997; 25(1):27–45.
75. Olds, D.; Henderson, CR., Jr; Cole, R.; Eckenrode, J.; Kitzman, H.; Luckey, D., et al. Long-term effects of nurse home visitation on children's criminal and antisocial behavior: fifteen-year follow-up of a randomized controlled trial. In: Feldman, MA., editor. *Early intervention: the essential readings.* Malden: Blackwell; 2004. p. 238-55.

Fig. 1. Mediation model of victimization and frequency of unprotected sex with depressive disorder as a moderator. Associations between mediators and controlling variables are not shown in the diagram. All coefficients are standardized. $*P < 0.05$

Fig. 2. Mediation model of victimization and frequency of unprotected sex with anxiety disorder as a moderator. Associations between mediators and controlling variables are not showed in the diagram. All coefficients are standardized. * $P < 0.05$

Table 1Description of demographics and study measures at baseline ($N = 118$)

	Percent	M	SD	Range
Demographics				
Age		21.1	1.6	(18–24)
Hispanic origin	22.0			
Race—African American	72.9			
Race—Other	5.1			
Married	9.4			
GED/High school graduate	45.8			
Currently working	28.8			
Ever been homeless	33.1			
Measures				
Frequency unprotected sex		2.0	1.4	(1–5)
Child victimization	89.0	9.6	6.8	(0–26)
Adult victimization	50.0	1.2	1.6	(0–7)
DISC—Depression	10.3			
DISC—Anxiety	33.3			
Partner concurrency	21.9			
Sexual communication		2.2	1.0	(0–3)

Table 2Correlations among study variables ($N = 118$)

Variables	1	2	3	4	5	6	7
1. Child victimization	–						
2. Adult victimization	0.592**	–					
3. DISC depression	0.146	0.316*	–				
4. DISC anxiety	0.238*	0.221*	0.223*	–			
5. Partner concurrency	0.190*	0.327**	0.034	0.071	–		
6. Sexual communication	–0.114	–0.265*	0.056	–0.024	–0.284*	–	
7. Frequency unprotected sex	0.163	0.219*	0.029	0.157	–0.434**	–0.455**	–

* $P < 0.05$,** $P < 0.01$