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## HIV Sexual Risk Behavior Among Low-Income Women Experiencing Intimate Partner Violence: The Role of Posttraumatic Stress Disorder

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### Abstract

Posttraumatic stress disorder resulting from intimate partner violence (IPV-related PTSD), drug problems, and alcohol problems were tested as correlates of women's sexual risk behavior. Participants were 136 low-income women experiencing physical violence by a male partner during the past 6 months. Sexual risk behavior was assessed by whether women had unprotected sex with a risky primary partner (i.e., HIV-positive, injection drug user, and/or nonmonogamous), unprotected sex with a risky nonprimary partner (i.e. HIV-positive or unknown status), or traded sex during the past 6 months. Nearly one in five women engaged in these recent sexual risk behaviors. Simultaneous logistic regression results revealed IPV-related PTSD, but not drug or alcohol problems, was significantly associated with sexual risk behavior while controlling for childhood abuse and demographic covariates. Women with IPV-related PTSD had four times greater odds of recent sexual risk behavior compared to women without IPV-related PTSD. Implications for HIV prevention interventions are discussed.

### Keywords

Intimate partner violence; Posttraumatic stress disorder; Sexual risk behavior; Drug abuse; Childhood abuse

### Introduction

HIV/AIDS continues to be one of the leading causes of women's mortality in the United States [1] with most women contracting HIV (i.e., 72%) through high-risk heterosexual contact [2]. One group of women at risk for HIV through high-risk heterosexual contact is women who experience intimate partner violence (IPV; [3–5]). Among women who experience IPV, posttraumatic stress disorder (PTSD) and drug or alcohol problems yielding diagnoses of drug or alcohol abuse/dependence are also common [6] and preliminary evidence suggests these mental health problems are also associated with women's sexual risk behavior [7–12]. Despite

the overlap of these problems and behaviors, we are unaware of studies that have examined the relationships between PTSD, drug problems, and alcohol problems simultaneously in relation to sexual risk behavior among women experiencing IPV.

A growing body of literature suggests women who experience IPV are at risk for HIV through a number of sexual risk behaviors [3–5]. For example, IPV has been associated with women having sex with risky partners, including those who are HIV-positive, injection drug users, and nonmonogamous [13,14]. IPV has also been positively associated with unprotected sex [15–18], although some studies have found no [17,19] or negative [19] relationships between IPV and unprotected sex. Such inconsistencies may be attributable to methodological variations across studies including study samples, how IPV was measured (chronicity versus positive history), how condom use was measured (frequency of condom use versus whether a condom was used during last sex), and the partner (e.g. primary versus non-primary partner) with whom women were having sex and not using condoms. Women who experience IPV may also be unable to negotiate condom use because they fear retribution or are raped by a partner [20]. For example, African American women who experienced IPV reported being 9.2 times more likely than those who did not experience IPV to report their partner threatened physical violence when women asked their partners to use condoms [21]. Studies have also shown IPV to be positively associated with women having more than one sex partner during the previous year [13,16] and trading sex [22].

Mental health problems such as PTSD and drug or alcohol abuse/dependence are common among women experiencing IPV and occur at rates much higher than those found in general populations of women [6]. In a meta-analysis of IPV and mental health problems, between 31 and 84% of women with histories of IPV were found to meet criteria for PTSD and between 7 and 44% were found to have drug or alcohol abuse/dependence [6]. While varying prevalence rates of PTSD and substance use disorders were influenced by methodological differences across studies, including sample populations (e.g. shelter, emergency room patients, or psychiatric patients), sample size, and measurement (e.g., self-administered questionnaire or structured interview), the positive association between these mental health problems and IPV was consistent across studies [6]. Further, rates of PTSD, drug dependence, and alcohol dependence are higher among women experiencing recent IPV (within the last 12 months) than past IPV (prior to the last 12 months; [23]).

PTSD and drug or alcohol problems often co-occur [24] and are associated with negative health behaviors [25] including sexual risk behavior [7–12]. Women's drug and alcohol problems, including abuse or dependence, have been positively associated with women's sexual risk behavior including frequency of sex trade, reduced condom use during intercourse [11], partner nonmonogamy, and having an intimate partner who uses IV drugs [12]. PTSD has also been positively associated with women's involvement in sex trade [9] and dysfunctional sexual behavior, including having sex with someone they hardly knew [10]. While these studies have been conducted with women who were in college [10], incarcerated [9], or entering substance abuse treatment [11], and among women with protective orders against male partners [12], we are unaware of any studies examining PTSD and drug or alcohol problems together in relation to sexual risk behavior among women experiencing IPV.

Furthermore, there has been a paucity of research examining the relationship between PTSD and women's sexual risk behavior that specifies the index trauma for which PTSD is assessed. PTSD from any traumatic event may compromise women's functioning, including sexual decision-making and consequent risk behavior. However, it is likely that triggers for traumatic stress among women with PTSD stemming from certain traumatic events (e.g. IPV, sexual assault) will impact women's sexual decision-making and sexual risk behavior more than triggers stemming from other traumatic events (e.g. car accident, fire, natural disaster). For

example, women who have IPV-related PTSD may be particularly at risk for being coerced or forced into sex by risky partners or unable to negotiate safe sex for fear of partners retribution [20].

The purpose of this study was to test PTSD resulting from IPV (i.e., IPV-related PTSD), drug problems, and alcohol problems as correlates of sexual risk behavior among women experiencing physical violence by a male intimate partner. Given the literature reviewed, we hypothesize that IPV-related PTSD, drug problems, and alcohol problems will be positively associated with women's sexual risk behavior while controlling for childhood abuse and demographic covariates [26].

## Methods

### Participants and Procedures

These data are from a larger study examining the relationships among IPV, posttraumatic stress, drug problems, and alcohol problems among a community sample of women who were currently experiencing IPV. The study was approved by the home institution's human investigation committee. Women were recruited between August 2004 to March 2006 from community establishments such as businesses, public agencies, and health care centers in and around New Haven, Connecticut. Eligibility criteria were: (1) female; (2) 18 years of age or older; (3) English speaking; (4) being in a heterosexual relationship for at least 6 months and reporting physical victimization by that partner during that time; (5) continuous partner contact (i.e., saw their partner at least twice weekly with no more than 2 weeks apart during the previous month); and (6) a monthly household income of no greater than \$4,200, which was determined a priori to control for greater income/higher socioeconomic status being associated with greater access to and utilization of treatment and services, which can have an impact on mental health and substance use symptoms.

Two hundred twelve women met eligibility criteria, provided written informed consent, and participated in a 2-hour, in-person structured, computer-assisted interview [27]. Assessments were administered by female masters and doctoral level research associates and participants were remunerated \$50. Interviewers informed women about the nature of the study, asked participants if their participation in the study would put their safety at risk in any way, and were trained on how to respond if the participant reported safety concerns (none were reported). Interviewers also debriefed women at the end of the interview and provided them with a list of community resources including those for employment, food, and benefits assistance, mental health and substance use treatment, and IPV-specific services. Interviewers also asked participants if they wanted assistance accessing resources and provided participants with assistance if requested. Of the 212 women, nineteen were HIV-positive and thus were removed from the current analysis in order to examine women at risk for HIV. Fifty-seven participants had missing data, predominately on two variables of interest to this study (drug and alcohol problems) due to late inclusion of these instruments into the assessment. The final sample for this study was 136 HIV-seronegative women who met the above inclusion criteria and provided complete data on the variables of interest.

### Measures

**HIV-Risk Behavior**—Participant's sexual risk behaviors were assessed over the prior 6 months through a questionnaire developed for this study consisting of 25 questions regarding women's sexual behavior and health (Adapted from [28,29]). Questions included, "Is your partner HIV-positive," "Has your partner used intravenous drugs (or needles) in the past 6 months," and "Does your partner have oral, anal, or vaginal sex with other people." Questions also ascertained the number of times during the past 6 months women had unprotected anal or

vaginal sex with (1) their primary partner and/or (2) other partners who were either HIV-positive or whose HIV status was unknown. Women were also asked whether they had traded sex for money, drugs, or shelter in the past 6 months.

Responses of “don’t know” to questions such as whether a woman knew if her primary partner was nonmonogamous, HIV-seropositive, or an IDU were recoded to “No” responses as this was the most conservative method for examining sexual risk behavior. A dichotomous variable reflecting women’s sexual risk behavior was created by coding one or more affirmative responses to the following items as the presence of sexual risk behavior (0 = no sexual risk behavior, 1 = sexual risk behavior) during the previous 6 months: (1) unprotected anal or vaginal sex with a primary partner who was HIV-seropositive, (2) unprotected anal or vaginal sex with a primary partner who had used IV drugs during the previous 6 months, (3) unprotected anal or vaginal sex with a primary partner who had multiple sex partners during the previous 6 months, (4) unprotected anal or vaginal sex with a non-primary partner whose HIV status was either positive or unknown, and/or (5) woman has been involved in sex trade.

**IPV-Related PTSD**—The Posttraumatic Stress Diagnostic Scale (PDS; [30,31]) is a standardized self-report measure of PTSD that provides both an indication of a PTSD diagnosis according to the Diagnostic and Statistical Manual of Mental Disorders-IV (DSM-IV; [32]) and PTSD symptom severity scores. The questionnaire consists of 49 items that inquire about traumatic events experienced and assess the following DSM-IV [32] criteria for PTSD: (A1) Exposure to a traumatic event involving actual or threatened death or serious injury (yes/no), (A2) traumatic event caused intense fear, hopelessness, or horror (yes/no), (B) re-experiencing symptoms (at least one of five symptoms must be endorsed), (C) avoidance and numbing symptoms (at least three of seven symptoms must be endorsed), (D) arousal symptoms (at least two of five symptoms must be endorsed), (E) minimum of 1 month symptom duration, and (F) disturbance causes clinically significant impairment on functioning. Because the purpose of this study was to assess IPV-related PTSD, the questions about which types of traumatic events had been experienced were not included (personal communication, Foa 2002). Participants were prompted to identify whether a range of the IPV they experienced from their current partner for the duration of the relationship ever involved actual or threatened death or serious injury and whether the event caused them to feel intense helplessness or horror, thereby meeting diagnostic criteria A1 and A2. Criteria B through F were assessed over the previous 6 months.

The seventeen symptoms listed for the re-experiencing, avoidance and numbing, and arousal symptom clusters are rated on a four-point scale of severity and can be summed to indicate PTSD severity. The PDS also provides an indication of a PTSD diagnosis when all six DSM-IV criteria (A–F) for PTSD are met. The PTSD indication yielded by the PDS has been shown to be in 82% agreement [31] with the PTSD diagnosis yielded by the Structured Clinical Interview for DSM-III-R; [33]. The PDS also has been shown to have 0.89 sensitivity and 0.75 specificity [31]. Given the intent of this study to examine PTSD in relation to women’s sexual risk behavior, the dichotomous variable representing an indication of a DSM-IV PTSD diagnosis was used in the logistic regression while the PTSD re-experiencing, avoidance and numbing, and arousal symptom severity scores were used in a post hoc analysis.

**Drug Problems**—The Drug Abuse Screening Test (DAST; [34,35]) consists of 10 items assessing drug use problems with “yes” or “no” response options. Questions pertain to regret, problems with others, and illegal activities associated with drug use. Questions were asked with respect to participants’ past 6 months drug use. Answers associated with drug use problems were assigned the value “1” (otherwise “0”) and the ten items were summed. This instrument uses a cutoff score of 3 to be indicative of drug problems [34]. The dichotomous variable based on that cutoff (total scores of 0–2, and those of 3 and greater) was used in analyses [34].

**Alcohol Problems**—The Alcohol Use Disorders Identification Test (AUDIT; [36]) was used to assess alcohol problems during the past 6 months. This measure consists of 10-items, each of which is rated on a scale ranging from 0 to 4, with higher responses being more reflective of problematic alcohol use. Questions ask about the quantity and frequency of drinking and associated problems. A total score of 8 or above indicates hazardous alcohol use and possible dependence [36]. A dichotomous variable distinguishing between participants with and without scores of 8 or above was used in analyses to reflect those with and without probable alcohol problems.

**Childhood Abuse**—Childhood physical, sexual, and emotional abuse, as well as physical and emotional neglect, were assessed using the Childhood Trauma Questionnaire (CTQ; [37, 38]). This measure consists of 28 questions, twenty-five of which pertain to childhood abuse, with each question rated on a five-point scale ranging from (1) never true to (5) very often true. A summary score of the 25 items was used in these analyses ( $\alpha = .86$ , current sample).

**Sexual Coercion and Assault by an Intimate Partner**—Questions from the Conflict Tactics Scale-2 (CTS-2) pertaining to sexual IPV [39] and the Sexual Experiences Survey (SES; [40]) were used to obtain descriptive information regarding participant's reports of sexual coercion and assault by a primary partner during the previous 6 months.

**Demographics**—A demographic questionnaire assessed participant age, race/ethnicity, employment status, marital status, and number of children. Because African American women have greater risk for contracting HIV [41], we dichotomized race to be not African American (coded 0) and African American (coded 1).

## Data Analysis

Analyses were performed using SPSS version 15 [42]. Descriptive statistics, including counts and percents for categorical data and means and standard deviations for continuous data, were used to describe the sample. Logistic regressions were performed with each correlate tested both independently and simultaneously with the other correlates to test both unadjusted (i.e., bivariate) and adjusted (i.e., multivariate) models. To improve the interpretability of the odds ratios, the summary score for childhood trauma and age were converted to z-scores.

## Results

### Sample Demographics

Participants were predominately African-American (63.2% African American; 36.8% Not African American), between 18 and 58 years of age ( $M = 35.64$ ;  $SD = 10.49$ ) with at least a high school education or equivalent (72.8%), and unemployed (60.3%). Most women were married or co-habiting with their partners (61.8%). Women had been in a relationship with their current partners between 6 months and 33 years with an average 6.33 years ( $SD = 6.29$ ). They had between 0 and 11 children ( $M = 2.18$ ). Less than half of the women had drug (25.0%) or alcohol (20.6%) problems, or met full criteria for IPV-related PTSD (39.0%). More detailed information about the prevalence and frequency of women's drug and alcohol use are presented in Table 1. As shown, nearly half of the women (47.1%) had used drugs during the past 6 months with cannabis, cocaine, and heroin and other opiates being the most commonly used drugs. The majority of women had used alcohol during the previous 6 months (62.5%) with half having used alcohol to intoxication during the past 6 months (50.7%).

Table 2 presents information on the sexual risk behaviors of women in this study, including (1) the number of women who engaged in the five recent sexual risk behavior outcomes, and (2) the recent sexual coercion and assault experienced by women in this study. As shown,



nearly one-in five women (18.4%) had engaged in one of the sexual risk behaviors of interest during the previous 6 months. The most commonly reported sexual risk behavior was unprotected anal or vaginal sex with a primary partner who was nonmonogamous (11.0%) and the least commonly reported sexual risk behavior was unprotected anal or vaginal sex with an HIV-seropositive person (0.7%). Additionally, 47.8% of women experienced sexual coercion or assault by their primary partners during the previous 6 months as assessed by one of the six related items in Table 2. Further, 14.0% of women reported their partner refused to wear a condom and 12.5% of women reported being “somewhat” or “very frightened” to ask their partner to wear a condom.

Table 3 presents the means, standard deviations, and correlations for study variables. Values represent means and standard deviations for the continuous variables (i.e., childhood trauma and age) and the number and percentage of participants classified by each of the five dichotomous variables (i.e., sexual risk behavior, IPV-related PTSD, drug problems, alcohol problems, and race/ethnicity). As shown, IPV-related PTSD, drug problems, and childhood trauma were significantly associated with sexual risk behavior.

### Unadjusted Logistic Regression Models

Table 4 provides descriptive information about the women with sexual risk behavior as well as the unadjusted and adjusted odds ratios from the logistic regression analyses testing the correlates of women’s sexual risk behavior. Age, childhood abuse, race/ethnicity, drug problems, alcohol problems, and IPV-related PTSD were tested separately as correlates of sexual risk behavior. The results of these regression models are presented as the unadjusted odds ratios (OR) with 95% confidence intervals (CI). As shown, women with histories of childhood abuse, drug problems during the prior 6 months, and IPV-related PTSD during the prior 6 months had significantly greater odds of having recent sexual risk behavior in unadjusted models compared with women not reporting these problems.

### Adjusted Logistic Regression Model

A simultaneous logistic regression analysis was performed with sexual risk behavior as the outcome variable and age, race/ethnicity, childhood abuse, drug problems, alcohol problems, and IPV-related PTSD as correlates. Multicollinearity diagnostic tests revealed no problematic associations among correlates; tolerance values (.80–.97) were above a threshold of .1 and VIF values (1.04–1.25) were below a threshold of 10 [43]. The specified full model with all six correlates was significantly better than the unspecified model  $\chi^2(6, N = 136) = 27.23, P < .01$ . Additionally, the Hosmer and Lemeshow Test was non-significant, indicating support for the model. Cox and Snell (.181) and Nagelkerke (.295) values estimated that between 18.1 and 29.5% of the variance in sexual risk behavior could be explained by the correlates tested. The results of the simultaneous regression analysis are presented as the adjusted odds ratios (AOR) with their associated confidence intervals in Table 4. As shown in the adjusted model, women who had current IPV-related PTSD were 3.99 times more likely to have sexual risk behavior than women who did not have IPV-related PTSD. Additionally, women who were younger or who reported more extensive childhood abuse histories were more likely to have engaged in sexual risk behavior than women who were older and/or who reported less extensive childhood abuse histories. Drug problems, alcohol problems, and race/ethnicity were not significant correlates of sexual risk behavior in the multivariate model.

### Post Hoc Analyses

We conducted post hoc analyses to answer the following questions specific to this study sample: (a) Are the effects of IPV-related PTSD on women’s sexual risk behavior mediated by women’s drug problems? And (b) Are there differential relationships between PTSD symptom severity clusters and women’s sexual risk behavior?

To test the first question, a series of logistic regression analyses were conducted to test mediation as outlined by Kenney [44]. First, IPV-related PTSD was treated as the independent variable, drug problems as the mediator, and sexual risk behavior as the dependent variable. While IPV-related PTSD was significantly and positively associated with drug problems, drug problems were not significantly associated with women's sexual risk behavior when controlling for IPV-related PTSD. Findings were the same with and without covariates in the model (i.e., age, race, childhood abuse, and alcohol problems) and suggest women's drug problems do not mediate the relationship between IPV-related PTSD and women's sexual risk behavior.

Finally, given (a) evidence that PTSD was significantly and positively associated with women's recent sexual risk behavior and (b) theories and evidence suggesting PTSD symptom clusters may be differentially related to health outcomes [45–47], a post hoc analysis was run to explore whether certain clusters of IPV-related PTSD symptoms may be more strongly related to sexual risk behavior. A hierarchical logistic regression analysis was run with age and childhood abuse entered into the model as a block prior to entering three IPV-related PTSD symptom clusters (severity of re-experiencing, avoidance and numbing, and arousal symptoms) as a second block. The specified full model with all five correlates was significantly better than the unspecified model  $\chi^2(5, N = 136) = 28.98, P < .01$ . Additionally, the Hosmer and Lemeshow test was not significant indicating support for the model. In the adjusted model, women who were younger and who reported more extensive childhood abuse histories were more likely to engage in recent sexual risk behavior. Interestingly, avoidance and numbing symptom severity was significantly and positively associated with women's sexual risk behavior (AOR = 1.30, 95% CI = 1.10, 1.55,  $P < .01$ ) while arousal symptom severity was significantly and negatively associated with women's sexual risk behavior (AOR = 0.81, 95% CI = 0.67–0.99,  $P < .05$ ). There was no significant association between re-experiencing symptom severity and women's sexual risk behavior.

## Discussion

To our knowledge, this is the first study testing the relationships of IPV-related PTSD, drug problems, and alcohol problems with sexual risk behavior among women experiencing IPV. Findings revealed that nearly one in five women currently in physically abusive relationships had recently engaged in one of the sexual risk behaviors examined, including unprotected sex with a risky primary or nonprimary partner or sex trade during the previous 6 months. We hypothesized that IPV-related PTSD, drug problems, and alcohol problems would be associated with women's sexual risk behavior. Indeed, women experiencing IPV who had IPV-related PTSD had four times greater odds of engaging in sexual risk behavior in the past 6 months compared to women experiencing IPV but who did not have IPV-related PTSD. These findings are underscored by the fact that they were evident while controlling for women's drug and alcohol problems, childhood abuse, and other demographic covariates. Although cross sectional and preliminary in nature, results of our mediational analysis demonstrate that IPV-related PTSD is significantly and directly related to sexual risk behavior, and eclipses the effect of women's drug or alcohol problems. Further, engaging in sexual risk behavior is frequently not under the control of the women in violent relationships. It is likely that drug and alcohol use do not function as mediators between IPV-related PTSD and sexual risk behavior, but as separate and related consequences of traumatic stress. This finding is in line with theory and empirical evidence supporting the self-medication hypothesis [48,49], which suggests individuals may use drugs or alcohol to cope with negative affect.

The relationship between IPV-related PTSD and women's sexual risk behavior reported here is consistent with findings from other studies which show a relationship between PTSD and sexual risk behavior among women who were incarcerated [9] and college women [10]. Our

findings extend previous work in this area by examining (1) the relationships between PTSD, drug problems, and alcohol problems simultaneously in relation to sexual risk behavior among women who currently were experiencing IPV, and (2) PTSD specifically resulting from IPV. Our study is the first to establish a relationship between IPV-related PTSD and women's sexual risk behavior. Because we focused only on IPV-related PTSD, it is beyond the scope of this study to comment on the impact of other specific index traumatic events on sexual risk behavior. It is important that future research focuses on clarifying whether PTSD is related to women's sexual risk behavior regardless of the index traumatic event (e.g. IPV or car accident). This will lead to more appropriate and effective targeting of prevention intervention strategies for reducing women's sexual risk behavior.

Furthermore, an exploratory post hoc finding suggests that two of the three IPV-related PTSD symptom clusters were associated with women's sexual risk behavior, albeit in different directions. Avoidance and numbing symptom severity was associated with a greater likelihood of women having engaged in recent sexual risk behavior. Detachment from others is one component of avoidance and numbing symptom cluster that may particularly heighten women's sexual risk behavior as women may be detached from the entire sexual act including the riskiness of their partner and having their partner use a condom. Another component of the avoidance and numbing symptom cluster is a sense of foreshortened future; women may not use safe sex practices because they do not believe their efforts to do so would improve their health and functioning in the short term. Arousal symptom severity, however, was associated with a lower likelihood of women having engaged in recent sexual risk behavior. It is possible that heightened arousal and vigilance leads to increased attention to and avoidance of sexual risk behavior. To better understand the relationship between PTSD and women's sexual risk behavior additional studies are needed to examine whether the severity of PTSD symptom clusters are differentially related to women's sexual risk behavior.

Finally, drug and alcohol problems were not associated with women's sexual risk behavior in the multivariate logistic regression analysis, and drug problems were not found to be a mediator of the relationship between IPV-related PTSD and sexual risk behavior in post hoc analyses. However, consistent with other studies, drug problems did have a significant relationship with women's sexual risk behavior in the univariate analysis [11,12]. Further, PTSD is an important risk factor for the development of drug use disorders [49]. Thus, more research is needed to clarify the relationships between drug and alcohol problems, including abuse/dependence, and women's sexual risk behavior. Specifically, longitudinal studies are needed to examine whether drug and alcohol abuse/dependence mediate the relationships between PTSD and the sexual risk behavior of women in violent relationships.

Our findings document high rates of sexual risk behavior among low-income women experiencing current IPV. Prior to data analysis, data from 9% of the sample (19 of 212) were removed as these women were HIV-positive. Nearly one in five women in the final study sample engaged in one of the HIV sexual risk behaviors assessed. In addition, rates of sex trade over the past 6-month (5.1%) in this sample were twice the past-year rates (2.3%) found in national samples [50]. It should be re-iterated that women from the community were recruited based on their experience of current physical IPV; sexual behavior was not an inclusion criterion for this study. These findings provide further evidence that women who experience IPV may have greater sexual risk for HIV than many other populations of women and suggest the need for targeted HIV-prevention efforts for these women.

Findings should be interpreted within the context of important study limitations. First, this study was cross-sectional and therefore, causality can not be determined. Second, we believe that examining IPV-related PTSD is an asset given its relevance to sexual HIV-risk behavior with an abusive partner. However, we recognize that this also limits our ability to evaluate or



control for the effects of PTSD stemming from other traumatic events on women's sexual risk behavior. Third, our sample size was relatively small and may have limited our power to detect certain relationships in our multivariate analysis such as those between women's drug or alcohol problems and HIV sexual risk behavior. Fourth, the relationships between drug and alcohol problems with sexual risk behavior reported here may have been affected by the fact that we used screening measures for drug and alcohol problems rather than diagnostic measures of drug or alcohol abuse or dependence. Finally, the PTSD variable used in this study was based on a screening measure for PTSD and not clinical assessment; therefore it is likely that it does not represent with 100% accuracy the prevalence of PTSD.

Behavioral interventions focused on HIV-risk alone are inappropriate for women experiencing IPV [5]. In fact, women may be nonresponsive to risk-reduction messages given their preoccupation with personal safety. Further, women in violent relationships may lack the means to implement risk reduction given the nature and consequences of IPV in their intimate relationships [20]. Low-income women experiencing IPV may have particular difficulty implementing risk reduction given their greater likelihood of experiencing IPV, dependency upon male partners for basic needs (food/shelter), and being subject to more male dominated sexual decision making [51]. Attempting to implement safe sex practices may act as a trigger for physical IPV or affect women's access to meeting their basic needs. Therefore, multi-modal HIV prevention interventions are needed that address the context of women's sexual practices, including whether women may be able to safely negotiate such practices, in order to improve effectiveness [51]. For example, recent studies suggest trauma-focused mental health treatment may reduce women's sexual risk behavior [52,53] including risk for sexual revictimization [46,54] and IPV (including sexual coercion; [55]), while empowerment-focused HIV prevention interventions for women experiencing IPV have also demonstrated promise in reducing sexual risk behavior [53]. Thus, it is imperative that women-focused HIV prevention interventions address contextual factors such as violence and abuse that increase women's sexual risk behavior to effectively promote women's health and well-being [51].

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**Table 1**Prevalence and frequency of alcohol and drug use ( $N = 136$ )

	Lifetime		6-Month		30-Day	
	N (%)	N (%)	Median # days used <sup>a</sup>	N (%)	Median # days used <sup>a</sup>	N (%)
Drug use prevalence <sup>b</sup>	115 (84.6)	64 (47.1)	–	46 (33.8)	–	–
Cannabis	104 (76.5)	35 (25.7)	7	22 (16.2)	4	4
Cocaine	63 (46.3)	28 (20.6)	22.5	16 (11.8)	4	4
Heroin and other opiates	49 (36.0)	24 (17.6)	19.5	18 (13.2)	3.5	3.5
Sedatives, hypnotics, tranquilizers	20 (14.7)	12 (8.8)	29	10 (7.4)	22.5	22.5
Alcohol use prevalence	122 (89.7)	85 (62.5)	14	70 (51.5)	3.5	3.5
Used to intoxication prevalence <sup>c</sup>	–	69 (50.7)	12	53 (39.0)	3	3

<sup>a</sup>Median number of days used reported only for women reporting to have used respective drug during past 6-month or 30-day time period. *Note:* number of days was asked with respect to each drug rather than any drug use, therefore number of mean days for 6-month or 30-day drug use reported for specific drugs and not any drug use

<sup>b</sup>Prevalence and frequency of hallucinogens, amphetamines, barbiturates, and inhalants not reported as less than 5% of sample used these drugs during the past 6-months

<sup>c</sup>Participants were not asked about lifetime alcohol use to intoxication



Table 2

Sexual risk behaviors ( $N = 136$ )

	Past 6 months $N$ (%)
Women endorsing any sexual risk behaviors comprising the sexual composite variable	25 (18.4)
1. Unprotected anal or vaginal sex with a nonmonogamous primary partner	15 (11.0)
2. Traded sex	7 (5.1)
3. Unprotected anal or vaginal sex with other partner(s) whose HIV status was positive or unknown	7 (5.1)
4. Unprotected anal or vaginal sex with a primary partner who is an IDU	3 (2.2)
5. Unprotected anal or vaginal sex with a primary partner who is HIV-seropositive	1 (0.7)
Women positively endorsing any questions below about sexual coercion and assault by primary partners	65 (47.8)
1. Partner made her have sex when she did not want to by pressuring or arguing with her	50 (36.8)
2. Partner made her have sex when she did not want to by claiming authority as "man of house"	29 (21.3)
3. Partner made her have sex when she did not want to by using physical force	20 (14.7)
4. Partner used threats to make her have sex	18 (13.2)
5. Partner made her have sex without a condom	17 (12.5)
6. Partner made her have sex by giving alcohol/drugs	15 (11.0)

**Table 3**

Variable means (or percentages), standard deviations, and correlations ( $N = 136$ )

Variable	M, N (%) <sup>a</sup>	SD	Correlations							
			1	2	3	4	5	6	7	
1. Sexual-risk	25 (18.4%)	–	–							
2. IPV-related PTSD	53 (39.0%)	–	.32**	–						
3. Drug problems	34 (25.0%)	–	.21*	.27**	–					
4. Alcohol problems	28 (20.6%)	–	.04	.08	.29**	–				
5. Childhood abuse	50.32	20.17	.32**	.37**	.17*	.05	–			
6. Race/ethnicity	86 (63.2% <sup>b</sup> )	–	.01	-.14	.02	-.06	-.11	–		
7. Age	35.64	10.49	-.12	.09	-.04	.15 <sup>†</sup>	.08	.00	–	

\*  $P < .01$

\*\*  $P < .05$

<sup>†</sup>  $P < .10$

<sup>a</sup> Means are reported for continuous variables, the number of participants and percent prevalence is reported for dichotomous variables

<sup>b</sup> Percentage of African American women

Table 4

Logistic regression models testing correlates of women's sexual risk behavior

	N (%) Engaged in Sexual Risk Behavior	Unadjusted		Adjusted	
		Odds ratios	95% Confidence interval	Odds ratios	95% Confidence interval
Age <sup>a</sup>	–	0.73	0.47–1.13	0.53*	0.30–0.95
Childhood Abuse <sup>a</sup>	–	2.22**	1.41–3.49	2.00**	1.19–3.37
Race					
Not African-American	9 (36.0)	1.00	–	1.00	–
African-American	16 (64.0)	1.04	0.42–2.57	1.68	0.58–4.86
Alcohol problems					
Negative screen	19 (76.0)	1.00	–	1.00	–
Positive screen	6 (24.0)	1.28	0.46–3.58	1.26	0.35–4.48
Drug Problems					
Negative screen	14 (56.0)	1.00	–	1.00	–
Positive screen	11 (44.0)	3.01*	1.21–7.49	1.81	0.60–5.44
IPV-related PTSD					
No PTSD	7 (28.0)	1.00	–	1.00	–
PTSD	18 (72.0)	5.58**	2.14–14.59	3.99*	1.33–11.92

\*  $P < .05$ \*\*  $P < .01$ <sup>a</sup> Variable z-scores used in analyses