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Patterns of Violence Exposure and Sexual Risk in Low-Income, Urban African American Girls

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Abstract

Objective—This study examined the relationship between violence exposure and sexual risk-taking among low-income, urban African American (AA) adolescent girls, considering overlap among different types and characteristics of violence.

Methods—AA adolescent girls were originally recruited from outpatient mental health clinics serving urban, mostly low-SES communities in Chicago, IL as part of a two-year longitudinal investigation of HIV-risk behavior. A subsequent follow-up was completed to assess lifetime history of trauma and violence exposure. The current study (N=177) included violence exposure and sexual risk behavior reported at the most recent interview (ages 14-22). Multiple regression was used to examine combined and unique contributions of different types, ages, settings, and perpetrators or victims of violence to variance in sexual risk.

Results—More extensive violence exposure and cumulative exposure to different kinds of violence were associated with overall unsafe sex, more partners, and inconsistent condom use. The most significant unique predictors, accounting for overlap among different forms of violence, were physical victimization, adolescent exposure, neighborhood violence, and violence involving dating partners.

Conclusions—These findings put sexual risk in the context of broad traumatic experiences but also suggest that the type and characteristics of violence exposure matter in terms of sexual health outcomes. Violence exposure should be addressed in efforts to reduce STIs among low-income, urban African American girls.

Keywords

violence exposure; sexual risk behavior; adolescents; African American girls

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Introduction

Violence exposure is a major public health concern that affects numerous children and adolescents in the United States (Finkelhor, Turner, Ormrod, & Hamby, 2009) and encompasses a range of experiences from physical or sexual assault to witnessed violence. Violence can occur in homes, schools, and neighborhoods and can involve family, peers, or other members of the community. African American (AA) youths growing up in low-income, urban neighborhoods are at disproportionate risk for violence exposure (Foster et al., 2007; Voisin, 2007) since these communities have the highest rates of crime and violence (Berman, Silverman, & Kurtines, 2002; Osofsky, 1999). Violence exposure likely affects girls and boys in different ways (Voisin & Neilands, 2010), but less attention has been directed to the effects of violence on girls growing up in low-income, urban communities despite converging rates of violent victimization among males and females (Truman, 2011). This study examines the combined and unique contributions of different types, ages, settings, and perpetrators or victims of violence exposure to sexual risk among low-income, urban AA girls.

Sexual health may be one important way in which girls' development is impacted by violence. Understanding this relationship among low-income AA girls is particularly crucial since this population endures the greatest burden of sexual health consequences. Currently, 15-24 year-old AA females have the highest rates of Chlamydia and Gonorrhea reported in the US (CDC, 2011), and a recent Centers for Disease Control and Prevention study found that 44% of AA girls, compared to 20% of White and Mexican American girls, were infected with a sexually transmitted infection (STI) (Forhan et al., 2009). AA girls are also more likely than their White and Hispanic peers to report having sex and report earlier sexual debut (Centers for Disease Control and Prevention, 2010). Like other health disparities that affect minority women, disproportionate risk for STIs is likely rooted in poverty and social disadvantage (LaVeist, Pollack, Thorpe, Feshahazion, & Gaskin, 2011; Pearlin, Schieman, Fazio, & Meersman, 2005). However, greater elucidation of the context and potential causes of sexual risk among young AA women is critical for addressing these problems (Wingood & DiClemente, 1998).

Exposure to violence may be an important contextual factor related to unsafe sexual behavior in low-income, urban AA adolescent girls. Numerous studies have found relationships between sexual victimization and risky sexual behavior or STIs (Senn, Carey, & Vanable, 2008). A growing body of research now links sexual risk to other forms of violence exposure including childhood physical abuse and neglect, other kinds of physical victimization, and violence witnessed in the community (e.g., Brady & Donenberg, 2006; Voisin & Neilands, 2010; Wilson & Widom, 2008; Wyatt et al., 2002). However, most research has focused on specific forms of violence, with sexual violence most often studied in connection with sexual risk behavior.

Despite considerable evidence that different forms of violence often coexist and overlap, little is known about their combined and unique effects or the characteristics of violence most related to sexual risk (Margolin, Vickerman, Oliver, & Gordis, 2010). In the child maltreatment literature, a few studies have investigated relationships between sexual risk and different forms of abuse or neglect considering overlap among them, but findings have been inconsistent. A study with a large sample of urban teens found that the combination of childhood physical abuse, sexual abuse, and neglect (but not any specific form of maltreatment) was associated with a greater number of sexual partners (Arata, Langhinrichsen-Rohling, Bowers, & O'Brien, 2007). In another study, physical abuse, but not sexual abuse, reported by Native American women was associated with riskier sexual partners (i.e., partners who used intravenous drugs, had other sexual partners, had been in

prison, or had sex with men) and STIs (Hobfoll et al., 2002). By contrast, Senn and Carey (2010) reported that only sexual abuse (not physical abuse, psychological abuse, or neglect) was uniquely related to sexual risk among women recruited from a public STI clinic. Thus, findings appear to differ greatly depending on the design, sample, and measures used. Some research suggests that the cumulative effects of different forms of violence or adversity are more important than any particular kind of experience in predicting psychosocial or health outcomes (Felitti et al., 1998; Finkelhor, Ormrod, & Turner, 2009; Margolin et al., 2010).

Theoretically, exposure to violence of different forms could have similar developmental consequences, such as sexual risk behavior. Within an ecological, developmental framework (Cicchetti & Aber, 1998; Perrino, Gonzalez-Soldevilla, Pantin, & Szapocznik, 2000), exposure to violence of any kind may result in a cascade of negative effects across multiple domains of physiological, psychological, and social development. These broad developmental effects may increase vulnerability to risky sexual behavior in adolescence. Biologically, repetitive activation of the physiological stress response system appears to have a broad adverse impact on neurological development (De Bellis, 2001; Ulrich-Lai & Herman, 2009), impeding capacities related to stress response and coping, managing emotional arousal, planning, and decision-making. On the one hand, exposure during early childhood may have the most profound impact considering the vast brain development that occurs before age 6 (De Bellis, 2001). However, adolescence appears to be a period of particular sensitivity to stress and to the effects of earlier stressors (Lupien, McEwen, Gunnar, & Heim, 2009). Exposure to violence in any form, particularly if it is chronic or repetitive, may be experienced similarly in regard to physiological response and lasting neurobiological effects, since similar processes are activated in response to diverse kinds of environmental threats and stressors (De Bellis, 2001; Ulrich-Lai & Herman, 2009).

Likewise, various forms of violence exposure can have similar psychosocial effects due to their disruption of basic developmental processes (Margolin & Gordis, 2000). Voisin (2011) describes an ecological conceptual framework through which community violence exposure disrupts development in school, peer, and mental health contexts, leading to sexual risk. Violence exposure is associated with numerous mental health problems in youths, including internalizing symptoms such as depression and anxiety and externalizing symptoms such as delinquency (Berman et al., 2002; Margolin & Gordis, 2000; Osofsky, 1999). These same kinds of mental health problems increase sexual risk behavior (Brown, 1997; Donenberg & Pao, 2004). Given the emotionally charged nature of sexual situations, risky behaviors may result from impaired emotional regulation (Ehrensaft et al., 2003; Kim, Pears, Capaldi, & Owen, 2009), or they may develop as part of a general pattern of delinquent behavior (Capaldi, 2002; Wolfe, Jaffe, & Crooks, 2006). Violence can also impact parenting and family relationships, since a primary caretaker may be the abuser, may not be able to protect the child from the perpetrator, or may also be affected by domestic or community violence (Osofsky, 1999; Voisin et al., 2011). Furthermore, exposure to violence may exacerbate the power inequity already experienced by girls in romantic and sexual relationships (Wingood & DiClemente, 1998, 2000) because of its impact on self-efficacy and sense of control (Margolin & Gordis, 2000), as well as the direct connection between partner violence and unwanted or unprotected sex (Wingood & DiClemente, 1998). Outcomes of violence exposure may differ depending on the setting or relationship of the person involved (Margolin et al., 2010). Theoretically, violence that is more proximal (e.g., in a child's home) and that involves parents or other close individuals may have the greatest impact (Margolin & Gordis, 2000; Osofsky, 1999). However, it is unclear how characteristics such as the setting or relationship to the perpetrator or victim relate to sexual risk. Because of its profound impact across multiple aspects of development, violence exposure of various forms may place girls at a significant disadvantage in negotiating sexual situations and practicing healthy sexual behavior.

The goal of the current study was to examine the contribution of different types, ages, settings, and perpetrators or victims of violence exposure to sexual risk among low-income, urban AA girls. Our primary hypotheses were that (1) violence exposure in general would be associated with greater sexual risk; (2) this relationship would persist across different types (physical victimization, sexual victimization, and witnessing violence), ages (child or adolescent), settings (home, neighborhood, and school), and perpetrators or victims (parents, other family members, peers, dating partners, or other community members) of violence; and (3) cumulative exposure to specific types of violence would be associated with increased sexual risk. We examined both unique and combined contributions of different types and characteristics of violence as correlates of three different indicators of sexual risk.

Methods

Design and Participants

Participants (N=177) were adolescent girls drawn from the sample of a previous longitudinal study of HIV-risk behavior. AA girls ages 12-16 years old were originally recruited from eight outpatient mental health clinics, serving urban, mostly low-SES communities in Chicago. Clinic staff invited eligible families to participate in the study when they initially contacted the clinic for treatment. A total of 266 participants completed the baseline interview, and at each of five waves of data collection, between 75% and 82% of the baseline sample was retained. Participants varied greatly in the in type and severity of mental health problems and extent of treatment received at baseline. Based on self reports on the Computerized NIMH Diagnostic Interview Schedule for children (CDISC 4.0) at baseline (Shaffer, Fisher, Lucas, Dulcan, & Schwabstone, 2000), 5% met DSM-IV criteria for PTSD in the past year, 4% for major depressive disorder (MDD), and 11% for conduct disorder (CD). Caregiver report on the CDISC 4.0 indicated 3% PTSD, 8% MDD, 13% CD, and 10% ADHD.

During 2009-2010, participants who completed the baseline and at least one follow-up were asked to return for a new study. Of eligible participants, 178 (74%) were enrolled, but one case was dropped due to lack of comprehension and inconsistent responding. Eligible participants who were not enrolled either refused (3%) or were lost because they could not be located, did not respond to contact attempts, or moved out of the state (23%). On average, 3.27 years passed since baseline and 1.14 years since Wave 5 of the initial study. Mean age was 17.72 years (SD = 1.65; range = 14.25 – 22.67). At this follow-up, girls completed a comprehensive assessment of lifetime trauma and victimization history and reported sexual risk behavior over the past 6 months. The analyses reported here included data from these most recent interviews with the adolescent girls, which were completed in private with trained interviewers. All procedures were approved by the Institutional Review Boards at the University of Illinois at Chicago and Rosalind Franklin University of Medicine and Science. Written, informed parental consent and adolescent assent or consent (ages 18 or over) was obtained for all participants.

Measures

Lifetime Victimization and Trauma History (LTVH)—Adolescent girls completed the LTVH (Widom, Dutton, Czaja, & Dumont, 2005), a 30-item gated instrument that assesses lifetime trauma and victimization history through a structured in-person interview. Questions refer to “scary and upsetting things” that happen to people “at home, in their neighborhood, or someplace else” and cover seven categories of experiences (general traumas, physical assault/abuse, sexual assault/abuse, family/friend murdered or suicide, witnessed trauma to someone else, crime victimization, and kidnapped or stalked). For each item, participants are first asked if they ever had the experience (e.g., “Has anyone ever shot

at you, stabbed you, hit you, kicked you, beaten you, punched you, slapped you around, or hurt your body in some other way?"). For positively endorsed items, follow-up questions include the ages at which the event first and last occurred, the number of times it happened, and relationship of the perpetrator or victim. In the current study, an additional question was added to indicate whether the event occurred at home, in the neighborhood, or at school. Participants can report up to four events corresponding to each item. The interview lasts approximately 30-45 minutes depending on how many items and events are endorsed. The LTVH was originally developed with a diverse sample of adults (49% female; 35% Black) who tended toward lower income and education levels, and the measure demonstrated validity related to other self-reports and documented cases of child abuse (Widom et al., 2005). The youth version was modified by the author of the measure for youth ages 10 to 17 through pilot testing and language modifications.

Data from this measure were used to calculate the total number of violent events reported, and separate variables reflecting the type of violence (physical victimizations, sexual victimizations, witnessed violence); age of violence (childhood events, adolescent events); setting of violence (home, school, neighborhood); and perpetrator of physical or sexual victimization or victim of witnessed violence (parents, other family members, peers, dating partners, other community members including strangers). Sexual victimizations included attempted assaults and unwanted touching as well as forced sex. The variables for sexual victimization and home violence exposure were coded as no exposure (0), single event (1), and multiple events (2) due to few reports of more than 2 events. For violence involving parents and dating partners, dichotomized variables reflecting presence (1) or absence (0) were used since base rates of these experiences were relatively low. Other variables reflected a total count of the number of events reported. Following the procedures used by Widom et al. (2005), an event could refer to multiple incidents with the same perpetrator (in the case of victimization) or victim (in the case of witnessed violence). The total number of incidents could not be reliably calculated since in cases of ongoing or chronic experiences, participants often could not give a number or reported "too many to count." These variables, therefore, represent the extent of violence experienced but not a count of all instances of victimization. To examine cumulative violence exposure, events were categorized into 15 specific kinds of violence exposure, reflecting the type (physical, sexual, or witnessed) and perpetrator or victim (parent or parental figure, other family member, peer, dating partner, or other community member). One point was given for each specific category of violence reported, and points were summed into a cumulative score.

AIDS-Risk Behavior Assessment (ARBA)—Risky sexual behavior was assessed with the ARBA, a computer-assisted structured interview designed specifically for use with teens to assess sexual behavior, drug use, and needle use (Donenberg, Emerson, Bryant, Wilson, & Weber-Shifrin, 2001). The ARBA was derived from several well-established measures (see Donenberg et al, 2001) and assesses alcohol and drug use (e.g., lifetime use, method of use, frequency), needle use (e.g., sharing, tattooing, piercing), and sexual behavior (e.g., lifetime sexual intercourse, frequency, contraceptive use, high-risk sexual behavior). Separate sets of questions are asked about oral, anal, and vaginal sex with clear definitions of these behaviors (e.g., "by vaginal sex, we mean has anyone put his penis into your vagina/private part?"). The ARBA takes 10-20 minutes to complete and assesses behavior over the past 6 months.

Information from the ARBA was used to create three separate variables reflecting sexual risk. Based on an index created by CDC researchers from rankings of sexual practices by experts in sexual behavior (Kotchick, Dorsey, Miller, & Forehand, 1999), we computed an *unsafe sex scale* reflecting no sexual activity (0); sex with one partner and always used condoms (1); sex with multiple partners and always used condoms (2); sex with one partner

and inconsistent condom use (3); or sex with multiple partners and inconsistent condom use (4). *Number of partners* was calculated from two items asking about male and female partners in the past 6 months ("How many male/female sex partners have you had in the past 6 months?") considering vaginal, oral, and anal sex. *Condom use inconsistency* during vaginal sex in the past 6 months (0 = no vaginal sex; 1 = always used condoms; 2 = more than half the time; 3 = half the time; 4 = some of the time; 5 = never used condoms) was derived from responses to the question, "Of the times you had vaginal sex in the past 6 months, how often did you or your partner use condoms/latex protection?" rated on a 5-point likert-type scale. Only condom use during vaginal sex was included since vaginal sex was most commonly reported, and separate items asked about condom use during oral or anal sex. Due to a technical instrumentation error, ARBA data for 6 participants was lost, and thus analyses with sexual risk outcomes include only 171 participants.

Results

Descriptive characteristics and bivariate relationships—Descriptive statistics for age and violence exposure variables and their bivariate correlations with the sexual risk variables (Pearson product-moment in the case of continuous variables and point-biserial in cases involving binary variables) are reported in Table 1. The majority of the sample (91.0%) reported exposure to at least one violent event (56.5% physical; 21.5% sexual; 84.2% witnessed), and participants reported an average of four violent events (each of which could include multiple instances involving a given perpetrator or victim). Of the 161 participants reporting exposure to violence, 65 (40.4%) reported exposure to only one form of violence (11 physical only, 1 sexual only, and 53 witnessed only), and 96 (59.6%) reported exposure to multiple forms (59 physical and witnessed, 7 sexual and witnessed, and 30 all three forms). Notably, all but one participant reporting sexual violence also reported witnessed violence. A larger percentage of participants reported experiencing violence during adolescence (88.1%) than during childhood (43.5%), and a greater percentage reported experiencing violence in their neighborhood (67.8%) than in their school (41.2%) or at home (23.2%). Peers were most often reported as the victim or perpetrator involved in violence (74.0%), and parents were least commonly reported (14.1%). Adolescent age was significantly associated with unsafe sex, number of partners, and inconsistent condom use and therefore was statistically controlled in subsequent analyses. As predicted, violence in general and nearly all types and characteristics of violence exposure were significantly and positively correlated with the unsafe sex scale, number of partners, and inconsistent condom use. As the only exceptions, violence exposure at school was not significantly correlated with any of sexual risk behavior outcomes, childhood violence exposure was not significantly correlated with number of partners, and violence involving parents was not significantly correlated with inconsistent condom use.

To investigate the possibility that some sexual experiences reported by the adolescents were sexual victimizations, we reviewed cases in which girls reported sexual victimization within a year of their current age (greater than the past 6 month time frame for reporting sexual experiences). Two participants reported forced sex at their current age, and two reported forced sex at their last age. By contrast, 93 (54%) reported sexual activity in the past six months. Of the four women reporting sexual assaults, two reported 6 or 7 sexual partners (and sexual assault from one individual), one reported a single partner, and one reported no sexual activity.

Table 2 reports bivariate correlations among the violence exposure variables (Pearson product-moment for continuous variables and point-biserial in cases involving binary variables). In general, the different forms and contexts of violence were significantly correlated, indicating that adolescents exposed to violence of one type were at risk for other

kinds of violence exposure. However, correlations among variables included in each multiple regression model were low to moderate, suggesting some overlap but not excessive multicollinearity. Thus, inclusion of these variables together in multiple regression models was deemed appropriate. Correlations suggested that childhood violence was most strongly associated with exposure in the home and involving parents or other family members, and adolescent exposure was most strongly linked to violence in the community (school or neighborhood) involving peers or other community members. Not surprisingly, home violence was strongly associated with violence involving parents and other family members, school violence was strongly associated with violence involving peers, and neighborhood violence was strongly associated with violence involving other community members.

Overall relationship between violence exposure and sexual risk—Controlling for age, the relationship between general violence and unsafe sex remained significant ($\beta = .37$, $p < .001$). Greater extent of violence was also associated with number of partners ($\beta = .22$, $p < .01$) and inconsistent condom use ($\beta = .37$, $p < .001$) when controlling for age.

Type of violence exposure—Hierarchical multiple regression analysis was conducted to evaluate the combined and unique effects of physical violence, sexual violence, and witnessed violence as independent variables, controlling for age. Separate models were examined with the unsafe sex scale, number of partners, and inconsistent condom use as dependent variables (see Table 3). Physical violence and witnessed violence demonstrated unique statistically significant associations with unsafe sex; however, the contribution of sexual violence was not significant. Physical violence was also uniquely significantly related to number of partners; however, sexual violence and witnessed violence were not significantly related to number of partners. Physical violence and sexual violence demonstrated unique statistically significant associations with inconsistent condom use; however, the contribution of witnessed violence was not significant. Including physical violence, sexual violence, and witnessed violence in the models accounted for an additional 7.7% (number of partners) to 14.6% (condom use) of the variance in sexual risk outcomes compared to models with age alone. Combined, the variables in the final model accounted for 12.8% to 17.9% of the variance in sexual risk. Because a number of participants who reported sexual abuse at a previous interview did not report sexual victimization here (8 of 18 girls who previously reported sexual abuse), we created a variable reflecting any sexual victimization reported at either interview (a binary variable since the previous questions did not ask about the number of events or perpetrators) and ran an additional multiple regression model with this variable in place of the original sexual victimization variable. Results were consistent with those reported above, except that the relationship between sexual victimization and condom use inconsistency dropped in magnitude and to marginal significance ($\beta = .13$, $p < .10$).

Age of violence exposure—As shown in Table 3, both childhood violence exposure and adolescent violence exposure were significantly associated with unsafe sex in the multivariate model. In the model with number of partners as the dependent variable, the relationship with adolescent violence exposure, but not childhood violence exposure, was significant. In the model for inconsistent condom use, the relationship with adolescent violence exposure was significant, but the association with childhood violence exposure was not. Including childhood violence exposure and adolescent violence exposure in the models accounted for an additional 5.6% (number of partners) to 14.6% (condom use) of the variance in sexual risk outcomes compared to models with age alone. Combined, the variables in the final models accounted for 10.7% to 17.7% of the variance in sexual risk.

Setting of violence exposure—In the multivariate model, neighborhood violence exposure was significantly associated with unsafe sex; however, home violence exposure and school violence exposure were not (see Table 3). Similarly, neighborhood violence exposure was significantly associated with number of partners; however, home violence exposure and school violence exposure were not. Neighborhood violence exposure and school violence exposure were significantly associated with inconsistent condom use, while home violence exposure was not. Including home violence exposure, neighborhood violence exposure, and school violence exposure in the models accounted for an additional 5.8% to 15.7% of the variance in sexual risk compared to models with age alone. Combined, the variables in the final models accounted for 10.9% to 20.3% of the variance in sexual risk.

Perpetrator or victim of violence exposure—In the multivariate analysis for overall unsafe sex (see Table 3), violence involving dating partners was the strongest correlate. The relationship with violence involving other community members was also statistically significant, but no other perpetrator/victim variables were associated with unsafe sex. In the model with number of partners, violence involving dating partners was the only significant correlate. Similar to the model for unsafe sex, violence involving dating partners was most strongly associated with condom use inconsistency, and violence involving other community members demonstrated a small but statistically significant relationship. Including the violence exposure variables in the models accounted for an additional 8.2% to 24.0% of the variance in sexual risk compared to models with age alone. Combined, the variables in the final models accounted for 13.3% to 28.5% of the variance in sexual risk.

Cumulative violence exposure—The number of specific kinds of violence reported by participants ranged from 0 to 8, with witnessed violence against peers most frequently reported (61.6%) and sexual violence from parents least frequently reported (3.4%). Cumulative violence exposure was positively associated with the unsafe sex scale ($r = .44$, $p < .001$), condom use inconsistency ($r = .42$, $p < .001$), and number of partners ($r = .30$, $p < .001$). As expected, sexual risk increased as the number of specific categories of violence exposure increased. These relationships held when age was controlled in hierarchical linear regression models with dependent variables of unsafe sex ($\beta = .43$, $p < .001$), number of partners ($\beta = .28$, $p < .001$), and condom use inconsistency ($\beta = .40$, $p < .001$).

Discussion

Findings from this study demonstrate a connection between violence exposure and sexual risk in a vulnerable population of AA girls from low-income urban neighborhoods. Although nearly all of the girls in this sample reported some exposure to violence, more extensive violence exposure and exposure to more kinds of violence were associated with greater sexual risk. Whereas most research linking early trauma to sexual risk has focused on sexual abuse, this study adds to a growing body of literature linking broader forms of child and adolescent trauma to sexual risk. Cumulative exposure to a greater diversity of violent events predicted sexual risk, consistent with other studies emphasizing the significance of poly-victimization (Finkelhor, Ormrod et al., 2009) or the cumulative effects of adversity (Felitti et al., 1998). These findings also support the concept of “stress proliferation” whereby exposure to trauma in one form increases risk for later experience of stress and trauma, contributing to health disparities observed in disadvantaged and minority populations (Pearlin et al., 2005). That older girls reported more sexual risk was not surprising given the age range of 14-22 in this sample and consistent evidence that age is not only associated with greater likelihood of sexual activity but also with riskier sexual behavior (Centers for Disease Control and Prevention, 2010; Kotchick, Shaffer, Miller, & Forehand, 2001). However, violence was associated with sexual risk over and beyond the effects of age and was in most case more strongly related.

Our findings also suggest that the type and characteristics of violence exposure matter. Although nearly all forms of violence were correlated with all indicators of sexual risk, different patterns emerged when overlap among the different kinds of violence was taken into account. Our findings are consistent with previous research indicating a stronger connection between victimization and sexual risk among adolescent girls relative to witnessing violence alone (Berenson, Wiemann, & McCombs, 2001). The one significant connection between sexual victimization and sexual risk – related to inconsistent condom use -- may be due to gender inequities in sexual relationships since in general girls have limited control over condom use, and this power differential may be exacerbated for girls with histories of sexual victimization (Wingood & DiClemente, 1998, 2000).

Results also emphasize neighborhood violence as an important predictor of sexual risk, relative to exposure at home or at school. This finding may reflect the pervasive threat and chronic stress associated with neighborhood violence, resulting in a greater impact on both neurophysiological (De Bellis, 2001; Ulrich-Lai & Herman, 2009) and psychosocial (Margolin & Gordis, 2000) aspects of development. Indeed, 35% of girls in the sample said their neighborhood was like a war zone, and it is likely that reports of specific events underestimate the actual extent of exposure or perceived threat considering that only the most salient and memorable events would have been reported. Voisin (2011) describes the far-reaching impact of community violence across developmental domains including school success and engagement, psychological symptoms, and peer relationships, all of which bear on sexual risk. Exposure to neighborhood violence may also reflect greater disadvantages in other areas, such as poverty, neighborhood social capital, and limited access to health care (Voisin et al., 2011).

By contrast, school violence was not strongly related to sexual risk and was even negatively correlated with inconsistent condom use when overlap with other contexts of violence was controlled. Less is known about the effects of school violence on health risk behaviors since research that differentiates between family and community violence (Voisin, 2007) tends to combine neighborhood and school exposure together. However, our findings are consistent with other evidence that home, school, and neighborhood violence have unique patterns of relationships with different mental health outcomes (Mrug & Windle, 2010). In our study, participants reporting school violence included girls who were bullied and victimized by peers, girls who were involved in fighting and violence themselves, and those who witnessed violence between peers. Thus, null findings may have resulted because our analyses could not tease apart the effects of these very different experiences.

The stronger link found between adolescent violence exposure, relative to childhood exposure, and sexual risk may reflect particular vulnerabilities of adolescent development. In general, childhood trauma has received greater attention in regard to developmental outcomes and might be expected to have a greater impact on such outcomes. However, other research examining the timing of trauma has found a stronger connection between adolescent exposure and antisocial behavior (Thornberry, Ireland, & Smith, 2001) relative to childhood exposure. The prefrontal cortex, an area of the brain impacted by exposure to stress (De Bellis, 2001), is undergoing its most critical development and appears to be particularly vulnerable to the effects of stress during adolescence (Lupien et al., 2009). Prefrontal functions relate to effective response to stress, management of affective stimulation, behavioral modulation and self-control, evaluating long-term consequences, making decisions, and solving problems (De Bellis, 2001; Lupien et al., 2009). Deficits in this aspect of neuropsychological development may, therefore, place girls at a significant disadvantage in negotiating sexual situations.

Another central focus of adolescent development involves the formation of romantic relationships. Exposure to trauma during this period may interfere with healthy development in these early relationships, thereby increasing risk for unsafe sex. That violence involving dating partners was the strongest and most consistent predictor of sexual risk, relative to other relational contexts, provides further support that these relationships play a key role in linking violence to sexual risk. Low-income AA girls already face an inherent power disadvantage in heterosexual relationships due to factors such as a sex-ratio imbalance, older partners, and economic dependence on partners (Wingood & DiClemente, 2000). This imbalance may be exacerbated by exposure to violence, which can make girls feel even more powerless or increase the importance of romantic relationships for attaining status, security, or material objects. Moreover, intimate partner violence is associated with unprotected sex since women risk abuse if they refuse sex or insist upon condom use (Wingood & DiClemente, 1998). Greater research attention is needed to examine connections between violence and sexual risk in the context of romantic relationships.

As discussed in the introduction, a number of other mechanisms may help to explain the links between violence exposure and sexual risk found here. Particularly given that the girls in this sample were originally identified when they sought treatment at mental health clinics, mental health symptoms associated with violence exposure may help to explain these relationships (Margolin & Gordis, 2000; Voisin et al., 2011). In addition, although the family context of violence exposure was not as a strongly correlated with sexual risk as violence in the context of romantic relationships, the effects of violence on family relationships may play an important indirect role by setting the stage for unhealthy peer and romantic relationships (Wolfe et al., 2006). It is also possible that positive family relationships serve a protective function against the effects of violence exposure (Margolin & Gordis, 2000). These possible risk mechanisms and protective factors should be invested in future research.

That sexual violence was not more strongly or consistently linked to sexual risk was a surprising finding in this study. It is possible that the relationship between sexual abuse and sexual risk is inflated when other overlapping experiences with violence are not taken into consideration (Briere, 1992). In this sample, all but one of the girls who reported sexual violence reported witnessed violence, and many also reported physical violence exposure. Thus, the linkage with sexual risk may be largely accounted for by exposure to these other forms of violence. In the context of other forms of violence, which are more prevalent and may be more chronic and persistent in this group of girls, sexual victimization may convey little unique risk. These findings put sexual risk behavior in the context of broader traumatic effects on development (Margolin & Gordis, 2000; Voisin et al., 2011), rather than the effects of abusive sexual experiences per se. However, the relationship between sexual victimization and sexual risk in this population may be more complicated than captured by the present cross-sectional analyses since a longitudinal pattern may exist. In addition, this study did not evaluate a nonlinear relationship that may exist since sexual abuse can result in avoidance of sexual interactions, rather than greater sexual risk, for some individuals (Noll, Trickett, & Putnam, 2003). It does not appear that lack of significance for these relationships was due to inadequate power since the magnitude of effects was very small. However, it is important to consider that our results could be due to inconsistent or unreliable reports, which may have obscured relationships that actually exist. Other research suggests that self reports of childhood abuse are not always consistent across different time points or with documented evidence (Widom & Czaja, in press).

A number of other important limitations must be considered in drawing conclusions from this study. First, as noted above, the relatively small number of girls reporting some forms of violence exposure limited our ability to examine more specific types of violence (e.g.,

physical abuse from parents) as predictors. Examination of sensitive topics such as violence exposure is always complicated and subject to numerous biases and recall errors, particularly when self-reports are used (Widom & Czaja, in press). It is possible that in some cases, reports of violence in this study are underestimates. For example, violence at home or involving parents may have been underreported since girls were told during the consent process that concerns about safety would be reported to authorities. Second, the cross-sectional nature of this study precludes any assumptions of causality. The stronger findings for adolescent, rather than childhood, exposure to violence may simply reflect the correlational nature of the study design and reliance on retrospective self-reports. More recent adolescent experiences may be more salient and memorable to respondents, and the less robust association with childhood exposure could reflect underreporting or less reliable reports. Girls who are engaged in more risky sexual behavior may also be more likely to be in situations involving violence. Third, it is important to consider that some of the risky sexual experiences reported may reflect abusive experiences themselves. Although the vast majority of the girls reporting sexual experience did not report sexual violence during this time period, this possibility cannot be entirely ruled out. Finally, unique characteristics of this sample limit generalizability to other populations of teens. AA girls from low-income, urban communities represent a population at disproportionate risk for both violence exposure and the consequences of sexual risk, and therefore research is needed to understand connections between these factors in this population of girls. However, it is important to consider that research samples may not generalize to typical individuals in the community. In this study, it is possible that the families who chose to participate and return over six waves and approximately three years of data collection were less likely to be affected by violence in their homes.

Clearly, violence exposure plays an important role in the development of sexual risk behavior among urban AA girls, but the mechanisms underlying this relationship remain to be clarified. Future studies are needed to examine potential moderators and mediators of the relationship between various forms of violence exposure and sexual risk behavior among AA girls. In addition, the temporal order of this relationship cannot be determined from the present study. That childhood violence was associated with the overall risk scale provides some evidence that violence exposure may precede the development of sexual risk, but longitudinal research is needed to understand the nature of this relationship and how violence exposure and sexual risk may relate over time. The overall pattern of findings in this study suggests that in examining relationships between violence and sexual risk in low-income, urban AA girls, it is important to use a multi-faceted assessment to account for the complexity of relationships and overlap among different forms of violence. Moreover, our findings highlight the importance of addressing violence exposure – particularly physical victimization and particularly violence that occurs in the neighborhood and in the context of romantic relationships – in efforts to prevent or reduce sexual risk among low-income, urban African American girls.

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Table 1

Descriptive Information and Correlations between Violence Exposure and Sexual Risk Variables

				Correlations with Risky Sex (r) [b]		
	Range	**M (SD) [a]**	**N (%)[a]**	**Unsafe Sex Scale**	**Number of Partners**	**Inconsistent Condom Use**
Age	14-22	17.72 (1.65)		.18**	.23**	.22**
Any Violence Exposure	0-24	4.03 (3.68)	161 (91.0)	.38***	.39***	.24**
Type of Violence Exposure						
Physical violence	0-7	1.15 (1.44)	100 (56.5)	.33***	.26***	.32***
Sexual violence	0-2	0.29 (0.60)	38 (21.5)	.20**	.18*	.18*
Witnessed violence	0-16	2.55 (2.56)	149 (84.2)	.31***	.16*	.33***
Age of Violence Exposure						
Childhood	0-5	0.72 (1.03)	77 (43.5)	.26***	.14	.22**
Adolescent	0-21	3.18 (3.05)	156 (88.1)	.35***	.24***	.38***
Setting of Violence Exposure						
Home violence	0-2	0.33 (0.64)	41 (23.2)	.20**	.18*	.18*
Neighborhood violence	0-11	1.89 (2.16)	120 (67.8)	.33***	.21**	.37***
School violence	0-6	0.73 (1.12)	73 (41.2)	-.05	-.02	-.06
Perpetrator or Victim						
Parents	0-1	0.21 (0.61)	25 (14.1)	.20**	.20**	.09
Other family members	0-2	0.44 (0.61)	66 (37.3)	.22**	.22**	.16*
Peers	0-13	1.80 (1.97)	131 (74.0)	.22**	.23**	.16*
Dating partners	0-1	0.24 (0.72)	27 (15.3)	.42***	.41***	.25***
Other community members	0-8	1.20 (1.58)	96 (54.2)	.31***	.32***	.16*

[a] Based on total sample (n = 177).

[b] Based on participants with data available on unsafe sex, number of partners, and inconsistent condom use (n = 171).

* $p \leq .05$.

** $p \leq .01$.

***$p \leq .001$.

Table 2

Correlations among Different Forms of Violence

	Physical	Sexual	Witnessed	Childhood	Adolescent	Home	Neighborhood	School	Parents	Other Family	Peers	Dating Partners
Physical												
Sexual	.28***											
Witnessed	.41***	.27***										
Childhood	.47***	.43***	.43***									
Adolescent	.68***	.41***	.86***	.30***								
Home	.28***	.45***	.21**	.55***	.19*							
Neighborhood	.57***	.41***	.69***	.44***	.78***	.22**						
School	.45***	.19**	.47***	.25**	.52***	.07	.25**					
Parents	.22**	.27***	.24**	.41***	.16*	.60***	.13	.13				
Other family	.33***	.33***	.34***	.50***	.33***	.53***	.32***	.13	.30***			
Peers	.61***	.25***	.75***	.29***	.83***	.00	.56***	.61***	-.02	.13		
Dating partners	.30***	.32***	.25**	.18*	.35***	.15*	.28***	.00	.05	.16*	.18*	
Other community	.52***	.41***	.68***	.41***	.77***	.17*	.79***	.33***	.18*	.21**	.44***	.19**

*$p \leq .05$.

**$p \leq .01$.

***$p \leq .001$.

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Table 3

Hierarchical Linear Regressions of Violence Exposure Variables Predicting Sexual Risk

	Unsafe Sex Scale			Number of Partners			Inconsistent Condom Use		
	F	**Δ R^2**	**β**	**F**	**Δ R^2**	**β**	**F**	**Δ R^2**	**B**
Block 1	5.91*	.03		9.07**	.05		8.23**	.05	
Age			.18*			.23**			.22**
Type of Violence Exposure									
Block 2	9.04***	.15		6.10***	.08		9.84***	.15	
Physical Violence			.24**			.23**			.22**
Sexual Violence			.07			.01			.21**
Witnessed Violence			.18*			.10			.05
Age of Violence Exposure									
Block 2	11.97***	.14		6.69***	.06		13.19***	.15	
Childhood Exposure			.17*			.08			.12
Adolescent Exposure			.29***			.20**			.33***
Setting of Violence Exposure									
Block 2	8.24***	.13		5.07**	.06		10.57***	.16	
Home Violence			.12			.11			.08
Neighborhood Violence			.33***			.20*			.38***
School Violence			-.14			-.08			-.16*
Perpetrator or Victim of Violence Exposure									
Block 2	10.30***	.24		4.19***	.08		10.87***	.24	
Violence involving parents			.11			.01			.10
Violence involving other family members			.08			.11			.09
Violence involving peers			.06			.08			.07
Violence involving dating partners			.34***			.19**			.33***
Violence involving other community members			.17*			.05			.18*

Note. N = 171. Each Block 2 was tested in a separate hierarchical linear regression.

* $p < .05$.

** $p < .01$.

*** $p < .001$.