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History of Sexual Abuse and Development of Sexual Risk Behavior in Low-Income, Urban African American Girls Seeking Mental Health Treatment

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Abstract

Objective: This study examined relationships between sexual abuse (SA) and patterns of sexual risk-taking among low-income, urban African American (AA) adolescent girls seeking mental health treatment.

Method: Participants (N = 158) were 12–16 year-old AA girls recruited from outpatient mental health clinics serving urban, mostly low-SES communities in Chicago, IL and followed for two years between 2003 and 2010. This study included self-reports of SA and four waves (T2–T5) of self-reported data on sexual experience and sexual risk-taking (number of partners, inconsistent condom use, and sex with a risky partner). Latent curve modeling (LCM) was used to examine patterns of sexual behavior over the four time points with SA and mental health symptoms as covariates.

Results: SA was significantly associated with T2 sexual experience, T2–T4 number of partners, T3 inconsistent condom use, and T2–T3 having a risky partner. These relationships decreased when mental health symptoms were controlled.

Conclusions: This longitudinal study revealed a complex relationship between SA and sexual risk that would be missed if sexual risk were assessed at a single time point. Findings supported early intervention to delay onset of sexual risk behavior among low-income AA girls with mental health concerns and histories of sexual abuse.

Keywords

sexual abuse; sexual risk behavior; African American girls; mental health

Introduction

Low-income, urban African American (AA) girls with histories of mental health problems are at heightened risk for Human Immunodeficiency Virus (HIV) and other sexually transmitted infections (STIs; Ickovics et al., 2002). AA girls have the highest rates of Chlamydia and Gonorrhea in the US (Centers for Disease Control and Prevention, 2009), and a 2009 Centers for Disease Control and Prevention (CDC) study found that 44% of AA girls, compared to 20% of White and Mexican American girls, were infected with a STI (Forhan et al., 2009). Moreover, in the most recent CDC Youth Risk Behavior Survey, AA girls were more likely than their White and Hispanic peers to report having sex, having had four or more partners, and sexual debut before age 13 (Centers for Disease Control and Prevention, 2012). Mental health problems further exacerbate STI risks (Donenberg & Pao, 2005). Like other health disparities affecting minority women, disproportionate risk for STIs is likely rooted in poverty and social disadvantage (Pearlin, Schieman, Fazio, & Meersman, 2005). However, identifying specific potentially modifiable factors related to sexual risk is critical for reducing rates of HIV and other STIs.

Sexual abuse (SA) may be an important risk factor leading to sexual risk in low-income AA girls (Dunlap, Golub, & Johnson, 2003). Much research links SA to various indicators of sexual risk (Koenig & Clark, 2004; Senn, Carey, & Venable, 2008), HIV (Arriola, Loudon, Doldren, & Fortenberry, 2005; Koenig & Clark, 2004), and other STIs (Ohene, Halcon, Ireland, Carr, & McNeely, 2005; Wilson & Widom, 2009). This relationship has been found in low-income, African-American women (Miner, Flitter, & Robinson, 2006; Wyatt et al., 2002), but findings have not been consistent (Miner et al., 2006; Wingood & DiClemente, 1997; Wyatt, Guthrie, & Notgrass, 1992). SA is also related to sexual risk in adolescents with psychiatric problems (Brown, Lourie, Zlotnick, & Cohn, 2000; Houck, Nugent, Lescano, Peters, & Brown, 2010). However, the correlation between SA and sexual behavior may be confounded by factors such as socioeconomic status, race/ethnicity, non-sexual forms of abuse or trauma, general family functioning, and community characteristics (Fiscella, Kitzman, Cole, Sidora, & Olds, 1998). In addition, this relationship may be more complex than can be captured in studies that examine sexual behavior at a single point in time. Human behaviors emerge in complex, dynamic patterns that can best be understood through observation of behaviors as they unfold over time (Sroufe & Rutter, 1984).

Although most studies linking SA to sexual risk have relied on cross-sectional analyses (Malow, Devieux, & Lucenko, 2006; Senn et al., 2008), two prospective longitudinal studies found that court-substantiated childhood SA predicted sexual risk in individuals followed into adolescence or adulthood (Noll, Trickett, & Putnam, 2003; Wilson & Widom, 2008, 2009). Another recent longitudinal study found that allegations of SA documented by child welfare agencies from birth to age 12 years predicted sexual intercourse and alcohol use by age 14 years (Jones et al., 2010), but results did not differentiate between early sexual debut

and alcohol use. In general, AA teens may be at *lower* risk for alcohol or drug use than their peers (French, Finkbiner, & Duhamel, 2002; Watt, 2008), and therefore it is important to understand developmental patterns of sexual risk separate from substance use in this population. Moreover, while the study took a developmental approach by examining trajectories of SA allegations, risk behavior was examined at a single time point.

The current study expanded upon existing research to examine relationships between SA and patterns of sexual risk in low-income, urban AA adolescent girls seeking mental health treatment. This study improved upon extant research by: (1) focusing on low-income AA girls, a high-risk but underserved population, and thereby limited confounding associated with race/ethnicity, gender, or socioeconomic status (SES); (2) examining longitudinal patterns of sexual behavior over four time points from early to late adolescence; and (3) considering multiple types of sexual behavior. We hypothesized that self-reported SA would predict a greater likelihood of sexual experience and more sexual risk-taking concurrent with the assessment of SA and at three follow-ups over 18 months. We hypothesized that these relationships would hold when accounting for mental health symptoms.

Methods

Design and Participants

This analysis drew upon a two-year longitudinal study examining mother-daughter relationships and girls' HIV-risk (i.e., sexual behavior). AA girls ages 12–16 years and their primary female caretakers were recruited when they sought treatment at one of eight outpatient mental health clinics serving urban, mostly low-SES communities in Chicago. These mental health clinics included non-profit agencies, a university-based clinic, and a psychiatry clinic within a large public hospital, and they served a range of urban youth populations through a variety of programs related to mental health and family systems interventions. Clinic staff asked families of eligible adolescents (12–16 years-old, female, self-identified as Black or African American) for permission to forward their contact information to research staff. Exclusion criteria included cognitive delay ($n = 6$) or child welfare guardianship ($n = 3$). Clinic staff did not share information about families who declined. Of those eligible and forwarded to the research team, 60 refused after contact with the recruiter, and 281 consented (82%). Fifteen participants did not complete the baseline assessment and were not considered eligible for follow-up.

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 posttraumatic stress disorder (PTSD) in the past year, 4% for major depressive disorder (MDD), and 11% for conduct disorder (CD). Caregiver reports on the DISC 4.0 indicated 3% PTSD, 8% MDD, 13% CD, and 10% attention deficit hyperactivity disorder (ADHD). Parent and youth reported symptom ratings (Achenbach, 1991a, 1991b) revealed higher rates of distress; 22% of youth self-reported clinically significant (T-score > 63) internalizing problems, and 31% endorsed clinically significant externalizing problems. Caregivers reported that 37% and 54% of girls reached clinically significant levels of internalizing and externalizing respectively. Procedures were approved

by relevant institutional review boards (IRB). Written informed parental consent and adolescent assent were obtained from all participants before completing study procedures.

A total of 266 girls and their female caregivers completed the baseline interview. They were assessed every six months for two years and completed a total of five waves of data collection. At each wave, 75% to 82% of the baseline sample was retained. Participants completed a series of pencil-and-paper and audio-computer-assisted (ACASI) measures. At the 6-month follow-up interview (T2), a subset of 163 adolescent girls (62%), completed a self-report measure of SA history. Girls who did not complete this measure either did not complete the T2 interview ($n = 52$), completed T2 before the measure was introduced into the study or before the measure had received IRB approval at a given site ($n=26$), or were recruited from a site that did not grant IRB approval for this measure ($n = 25$). In addition, five participants could not be included because of missing data for either child or adolescent abuse. The analyses presented here draw upon the adolescent girls' reports of mental health symptoms at baseline (T1), SA at T2, and sexual behavior at Waves 2–5 (T2–T5).

Measures

Sexual Abuse.—SA history was assessed through self-report on a measure adapted from Finkelhor (1979). Five items referred to childhood (“before you were a teenager”), and two items referred to adolescence (“since you’ve been a teenager”). SA was defined as endorsement of any of these seven items covering both penetrative (e.g., “did an older person (at least 5 years old) ever have oral, anal, or vaginal intercourse with you?”) and non-penetrative abuse (e.g., “did an older person (at least 5 years old) ever touch your sexual organs?”). One of the two adolescent questions asked if “anyone around your age ever forced you to have sexual intercourse against your will.” All other questions referred to “an older person,” 5 years older for childhood and 10 years older for adolescence.

Sexual Risk.—Sexual risk was assessed with the AIDS-Risk Behavior Assessment (ARBA), a computer-assisted structured interview designed to assess teen sexual behavior, drug use, and needle use (Donenberg, Emerson, Bryant, Wilson, & Weber-Shifrin, 2001). From this measure, we computed variables to indicate: (1) sexual experience (oral, vaginal, or anal) at each time point, reflecting cumulative reports (i.e., a report of sexual experience at one time point indicated sexual experience at the following points); (2) number of partners (male or female) in the past 6 months, with “0” reflecting no sexual experience during that time period; (3) inconsistency of condom use during vaginal sex in the past 6 months (0 = did not report vaginal sex in the past 6 months; 1 = always used condoms...5 = never used condoms); and (4) sex with a risky partner in the past 6 months, a binary variable reflecting experience of vaginal, anal, or oral sex with someone with HIV or AIDS, someone who worked as a prostitute, an injection drug user, someone whose sexual history was unknown to the respondent, or someone two or more years older because this age difference is associated with increased risk of unprotected sex in AA girls (DiClemente et al., 2002). The most frequently reported types of risky partners were someone with unknown sexual history and someone two or more years older. To address deviance from normality (skewness > 3 ; kurtosis > 10) and outliers, the number of partners variable was recoded such that “6” was the highest category indicating “more than 5” partners. Only a small number of participants

(one to four) reported more than five partners at any time point, and the recoded variable approximated a normal distribution.

Mental Health Symptoms.—Girls reported mental health symptoms on the Youth Self Report (YSR), a widely used measure of behavioral and emotional problems in adolescents ages 11–18 (Achenbach 1991b). The YSR generated raw and T-scores for internalizing (e.g., depression, anxiety) and externalizing (e.g., aggression, conduct problems) syndromes. Extensive evidence of reliability and validity has been reported for the YSR. The total raw score combining internalizing and externalizing symptoms was used in analyses, and descriptive statistics for the standardized total score are also presented.

Data Analyses

Relationships between SA and development of sexual risk behavior were examined with latent curve modeling (LCM) using MPlus 5.1. LCM employs a structural equation modeling (SEM) framework to test models with latent growth factors (i.e., intercept and slope) reflecting the level of and change in an outcome across multiple points in time (Bollen & Curran, 2006). This approach incorporated both developmental change and within-individual variation. LCM proceeded in three stages. The first stage involved testing separate growth curve models reflecting overall patterns of change from T2 to T5 (unconditional models) for each of the four outcomes. In these models, the intercept factor represented the level of the outcome at T2, and the slope factor represented change (e.g., increase or decrease) in the outcome across the four time points. For the binary outcomes of sexual experience and sex with risky partners, probit models were used. For the continuous outcomes (number of partners and inconsistent condom use), both linear and quadratic models were examined. Mean and variance estimates for both the intercept and slope factors were examined to determine the overall pattern of development for each outcome (although the mean of the intercept was not examined for binary variables because it was not a meaningful estimate).

In the second stage, we examined models with SA included as a covariate of both the slope and intercept factors (conditional models). To account for age differences in the level and development of sexual behavior, age at T2 was also included as a covariate of both the intercept and slope. To evaluate the relationship between SA and the level of the outcome at each point in time, models were tested with the intercept set at each of the 4 time points. Thus, the relationship between SA and the intercept reflected the difference between groups (i.e., those reporting SA compared to those not reporting SA) in the level of the outcome at a given time point. The relationship between SA and the slope indicated difference between the groups in the pattern of change across the four time points. The magnitude (i.e., effect size) and statistical significance of standardized coefficients (β) indicating the strength of relationships were examined. In the third stage, conditional models were tested with mental health symptoms (YSR total scores) as covariates, in addition to SA and age.

Full information maximum likelihood (FIML) estimation was used to handle missing data. This method uses all data available for each case and thus avoids biases and loss of power associated with traditional approaches to missing data (Allison, 2003; Schlomer, Bauman, &

Card, 2010). A weighted least square parameter estimator using a diagonal weight matrix with standard errors and mean- and variance-adjusted chi-square test statistic (χ^2) using a full weight matrix (WLSMV) was used for the models with binary outcomes; a maximum likelihood estimator that is robust to non-normality and non-independence of observation (MLR), equivalent to the Yuan-Bentler T2* test, was used for models with continuous outcomes. For both unconditional and conditional models, we evaluated multiple indices of overall model fit (Barrett, 2007). The recommended sample size for adequate power in SEM is a minimum of five, but preferably 10 or more, per estimated parameter (Kline, 1998). The models tested in this analysis ranged from 14 parameters in probit models to 22 parameters in quadratic models, and thus the sample size of 158 was within the recommended range of 110 to 220 participants for the most complex models.

Results

Descriptive Statistics

The current sample included 158 participants with data available on SA. Ratings on the Hollingshead (1975) Index indicated that, on average, families fell within the socioeconomic status associated with semi-skilled work (mean = 2.29, SD = 1.13). According to maternal reports, most of these girls were referred for treatment by their school (36%), family (20%), a counselor or therapist (19%), or their pediatrician (8%). Other referral sources (17%) included child welfare, juvenile court, law enforcement, psychiatric hospitalization, and church. At baseline, 60% were no longer seeking treatment, 31% were in treatment, and 10% were on a wait list or had an appointment scheduled. Those in active treatment reported receipt of individual therapy (90%), family therapy (38%), group therapy (26%), medication management (35%), case management (29%), and/or day treatment (25%); 37% reported previous psychiatric treatment; and 10% reported a history of psychiatric hospitalization. Participants who completed the SA measure did not differ from others in the sample in terms of baseline age, $t(264) = .27, p > .10$, SES (Hollingshead, 1975), $t(253) = .87, p > .10$, or youth reported mental health symptoms (Achenbach 1991b), $t(264) = -.80, p > .10$. Only sexual behavior at Waves 2–5 was examined to establish temporal precedence by capturing development of behavior after reports of SA.

Sexual abuse was reported by 17.1% of the sample ($N=27$); of those who reported sexual abuse, three reported both childhood and adolescent abuse; 18 reported only childhood abuse, and six reported only adolescent abuse. A variable reflecting any SA in childhood or adolescence was used as the covariate in LCM. Approximately one third of the sample reported sexual experience at T2, and approximately 60% were sexually experienced by T5 (Table 1). Inconsistent condom use increased from T3 to T5, but the other risk behaviors remained relatively stable across time.

Girls reporting SA were more likely than others to report sexual experience at all four time points, and reported increased sexual risk at all but the last time point (Figure 1). Note, however, that these sample statistics were not adjusted for age and did not correspond directly to estimated levels (intercept terms) generated in LCM, which were derived from averaging across individual regression lines reflecting change in the outcome from T2 to T5.

Pearson product-moment correlations were reported for the two continuous variables, point-biserial for cases involving a continuous variable and a binary variable, and phi coefficient for cases involving two binary variables. SA was significantly correlated with all sexual risk outcomes except for inconsistent condom use at T2 and T3, all four outcomes at T4, but only sexual experience at T5 (Table 2).

Latent Curve Modeling Results

Sexual experience (Figure 2a).—The unconditional probit model provided a strong fit for sexual experience reported over the four time points. The positive slope indicated a significant increase in the probability of sexual experience from T2 to T5 (Table 3). SA was positively associated with the intercept when it was set at any of the four time points, indicating that the adolescents reporting sexual abuse were more likely than those not reporting abuse to be sexually experienced at each period (Table 4). This relationship was only statistically significant at T2, although the coefficients were moderate in size at all time points. SA was also associated with a moderate increase in slope, though not statistically significant, indicating that the increased probability of sexual experience over time was greater for those reporting SA. When mental health symptoms were added to the model (Table 5), the pattern of results did not change. Similar to SA, the relationship between mental health symptoms and likelihood of sexual experience was only statistically significant at T2, although coefficients were moderate in size at T4 and T5.

Number of partners (Figure 2b).—The linear growth model reflecting change in number of partners from T2 to T5 yielded a good fit (Table 3). The non-significant mean slope indicated that girls reported a relatively consistent number of partners across time; however, a large negative association between the slope and intercept (Covariance β) indicated that the number of partners increased more over time for those who reported the fewest partners at T2. The quadratic term was non-significant, and therefore the simpler linear model was used in subsequent analyses. The conditional model including SA as a covariate also yielded a good fit (Table 4). The moderate and statistically significant positive association between SA and the intercept when it was set at T2, T3, or T4, but not when it was set at T5, indicated that girls reporting SA reported a greater number of partners at the three early time points but not at the latest time point. The negative association between SA and the slope reflected a pattern in which the SA group exhibited an overall *decrease* in number of partners from T2 to T5, whereas the average number of partners reported by the non-SA group did not change much over time. SA was more strongly related than age to the number of partners reported at T2 and T3. When mental health symptoms were added to the model (Table 5), the relationship between SA and number of partners was only significant at T2, but was reduced in magnitude, and dissipated sharply over time. Mental health symptoms were moderately associated with number of partners at all four time points, and thus may have largely accounted for the relationship between SA and number of partners observed at T2 and T3. However, the negative relationship between SA and the slope remained significant and moderate in size.

Inconsistent condom use (Figure 2c).—A linear growth model for change in inconsistent condom use from T2 to T5 yielded a good fit (Table 3). The slope was positive,

indicating an increase in unprotected sex over time. The quadratic model yielded an even stronger fit, and the quadratic term was significant, suggesting an accelerated increase in this risk behavior. Therefore, this more complex model was used for the conditional model. The conditional model with SA as a covariate yielded an acceptable fit (Table 4). Relationships between SA and the intercept term indicated that girls with history of SA reported less consistent condom use at T3 but not at the other time points. Age was more strongly related to condom use inconsistency at all four time points. When mental health symptoms were added to the model (Table 5), the pattern was similar except that SA was no longer significantly associated with inconsistency of condom use at T3. Mental health symptoms were associated with condom use inconsistency at T4 and T5 but not at the earlier points.

Sex with a risky partner (Figure 2d).—A probit model reflecting the likelihood of sex with a risky partner from T2 to T5 yielded an excellent fit (Table 3). The non-significant slope estimate indicated a relatively consistent probability of reporting a risky partner across the four time points, but a strong inverse correlation between the intercept and slope revealed that girls who did not report a risky partner at T2 were more likely to report a risky partner in the future. The conditional model with SA as a covariate, also provided a strong fit (Table 4). SA was moderately associated with the intercept when it was set at T2 or T3, but not when it was set at T4 or T5, indicating increased risk for the SA group at the early time points but not at the later time points. The negative relationship between SA and the slope, though not statistically significant, reflected a pattern whereby girls in the SA group exhibited a decrease in probability of reporting a risky partner over time, relative to a slight increase in probability among those not reporting SA. When mental health symptoms were added to the model (Table 5), the pattern of results was similar, although the relationship between SA and sex with a risky partner dropped in magnitude and was no longer significant at T3. Mental health symptoms were a moderate and statistically significant covariate of the likelihood of reporting a risky partner at T2 and T3, and the relationship was moderate in strength, though not statistically significant, at T4.

Discussion

Results from this longitudinal study revealed a complex relationship between sexual abuse and sexual risk behavior in low-income AA girls that would be missed if sexual risk behavior were assessed at a single point in time. The most significant difference between this study and others is that sexual risk was assessed at multiple points in time. The vast majority of studies have been cross-sectional, and previous longitudinal studies have assessed outcomes at a single point in time. In addition, the sample of treatment-seeking minority girls from low-income communities differed from the samples in most other studies, and most of the sexually abused girls received mental health treatment at some point during the study. Thus, findings may apply uniquely to this vulnerable population. Furthermore, this sample largely controls for demographic factors that may confound or enhance relationships in other studies.

Among low-income AA girls with histories of mental health problems assessed at four points, SA was associated with earlier sexual experience and increased likelihood of sexual experience over time. The overall pattern of results suggested that girls reporting SA

engaged in greater sexual risk behavior in early adolescence but not late adolescence. Somewhat surprisingly, SA was associated with a *decrease* in some sexual risk behaviors over time, suggesting that the early elevation in risk faded after approximately eighteen months. If only risk behavior at the final time point had been examined, we might have concluded that none of the four outcomes were associated with sexual abuse in this sample of girls. In this study the effects of age were controlled, and therefore the relationships between SA and sexual risk existed over and beyond age-related differences in sexual behavior. As expected, the likelihood of sexual experience and unprotected sex increased over time, and older girls tended to report riskier behavior. This pattern was consistent with reports from nationally representative research on youth sexual behavior (Centers for Disease Control and Prevention, 2012). However, SA was more strongly related than age to the number of sexual partners, at least in early adolescence.

Our findings suggested that low-income AA girls with SA history may be at increased vulnerability for early onset of sexual activity and sexual risk behavior, but may not differ from peers later in adolescence. In this sample of girls with histories of seeking mental health treatment, numerous other problems may have also contributed to risk behavior as they aged. Even in the absence of SA, psychopathology is related to increased sexual risk (Donenberg & Pao, 2005). In addition, other forms of trauma and violence exposure are associated with increased sexual risk in these girls (Wilson, Woods, Emerson, & Donenberg, 2012). Nonetheless, a greater number of partners, less consistent condom use, and increased likelihood of risky partners early in adolescence increases the probability that sexually abused girls will contract STIs or become pregnant. In addition, other research has found that initiation of sexual activity before age 15 largely accounted for the relationship between childhood sexual abuse and involvement in prostitution in young adulthood (Wilson & Widom, 2008). Thus, the early risk observed in victims of sexual abuse may be related to sexual risk in adulthood.

The finding that certain risk behaviors (number of partners and sex with risky partners) tended to decrease over time among sexually abused girls was surprising. This unexpected pattern may be due to the complex effects of sexual abuse, whereby some victims engage in promiscuous sexual relationships, but others may react by avoiding sexual interactions. It is possible that these complicated effects of sexual abuse change and evolve as girls age from early to late adolescence, when romantic and sexual relationships become a central aspect of development. These findings may also reflect a number of variables that were not examined here. It is possible that consequences of sexual risk-taking led these girls to become more choosy about their sexual partners, or to refrain from sexual interactions. It is also possible that girls with histories of sexual abuse were identified as at risk and provided with interventions to reduce sexual risk taking. This is particularly plausible given that the girls in this sample all had contact with the mental health system. Although the focus of treatment is unknown, girls who reported sexual abuse were more likely than others to be in mental health treatment at some point during the study (81.5% vs 39.7%) and at each of the time points.

Although similar patterns emerged when baseline mental health symptoms were accounted for, findings suggested that psychopathology may explain in part connections between SA

and sexual risk in early adolescence. Mental health symptoms were particularly related to the number of sexual partners reported by girls. The connection between psychopathology and sexual risk in adolescents has been reported in other studies (Donenberg et al., 2001; Donenberg & Pao, 2005). However, unlike the findings of Houck et al. (Houck et al., 2010), SA was not strongly associated with sexual risk beyond the effects of mental health symptoms. Rather than diminishing the importance of SA, these findings indicated that increased psychopathology may help to explain the connection between SA and sexual risk behavior. This interpretation is most appropriate given the strong correlation between SA and mental health symptoms. The combination of SA and mental health symptoms may be associated with poor social relationships, leading to less opportunity for romantic or sexual relationships, and therefore less risky behavior over time.

Further research is needed to uncover mechanisms to explain the link from SA to sexual risk in early adolescence. Discovery of important mediating mechanisms would provide more specific targets for prevention and intervention efforts. Mental health symptoms resulting from sexual abuse may represent an important mediating mechanism. A previous study found that reduced sexual assertiveness mediated the relationship between self-reported SA and unprotected sex in adult women (Morokoff et al., 2009), and similar characteristics might help to explain early sexual risk in adolescent girls. Other potential mediators include perception of sexuality as a way of forming or maintaining close relationships (Browning & Laumann, 1997) or obtaining material needs (Dunlap et al., 2003), a negative view of others and expectations for intimate relationships (Briere, 2002), or poor coping mechanisms (Briere, 2002; Senn et al., 2008). These characteristics may make sexually abused girls vulnerable to sexual behavior at early ages and with more partners in order to feel connected to others, avoid conflict with partners, or cope with stress. Similarly, girls may learn to use sexual relationships, particularly with older male partners, as a way to obtain status, security, material gifts, and other advantages (e.g., status associated with becoming a “baby mama”). As suggested by Dunlap, Golub, and Johnson (2003), girls growing up in low-income inner-city communities often learn to use sexuality as way to meet developmental needs related to intimacy, safety, and sense of importance, and that may be particularly true for girls who have been sexually abused.

A number of limitations of this study should be noted. First, SA was assessed through self-reports and thus was subject to bias and recall error. Girls may not have remembered early experiences of abuse or may have chosen not to talk about them. Underreporting of abuse could diminish relationships that actually exist, and could mean that findings merely reflect characteristics of girls who chose to reveal their abuse histories. Rates of SA in this sample were within the range of 13.2% to 27.8% reported by adolescent girls in nationally representative studies (Finkelhor, Turner, Ormrod, & Hamby, 2009; Hanson et al., 2008), although they are lower than rates reported in samples of girls in inpatient psychiatric settings (Brown et al., 2000) or therapeutic schools (Houck et al., 2010) who likely suffer from more severe mental health problems. However, reported rates of SA vary considerably depending on the definition used (Briere, 1992), and age differences included in our definition may have reduced reporting. Second, SA was only assessed at one point in time and, therefore, later abuse was not taken into account in the models examined. Third, only a subset of participants in the overall study completed the measure of SA, which reduced

power to detect effects and may have biased results. Fourth, with our measure of sexual experience, we cannot rule out the possibility that some of these experiences reflected abuse or coercion. Finally, results may not be generalizable beyond the population of AA girls recruited from mental health clinics serving low-income neighborhoods in Chicago.

In summary, findings from this study suggest that the relationship between sexual abuse and sexual risk-taking may be more complicated than is often assumed and may only be present at particular points of development. In a high-risk sample of low-income AA girls with history of mental health concerns, sexual abuse tended to be related to sexual risk early in adolescence, but this pattern faded over time. These findings suggest that interventions in pre-adolescence and early adolescence are needed to delay onset of sexual risk behavior among low-income AA girls with histories of mental health concerns and exposure to sexual abuse. Early interventions that address mental health symptoms may be beneficial in reducing risk for HIV and other STIs in this population.

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1a. Percent sexually experienced

1b. Mean number of partners

1c. Mean inconsistent condom use score

1d. Percent reporting a risky partner

Figure 1. Patterns of Sexual Experience and Sexual Risk Behavior in the Full Sample, Participants Reporting CSA, and Participants Not Reporting SA

Figure 2. Results of Latent Curve Modeling

Rectangles represent observed variables, and circles represent latent growth factors (i = intercept; s = slope; q = quadratic term). Numbers represent standard path coefficients from the covariates to growth factors (see Table 5 for statistical significance) or factor loadings of outcome variables.

Table 1.

Descriptive Statistics for Independent and Dependent Variables

	Time 2		Time 3		Time 4		Time 5	
Variable	N	%	N	%	N	%	N	%
Sexual abuse	158	17.1						
Childhood	158	13.3						
Adolescence	157	5.7						
Sexual experience	157	36.3	143	45.5	143	51.0	147	59.2
Sex with a risky partner	157	20.4	137	20.4	135	21.5	143	24.5
	N	M (SD)	N	M (SD)	N	M (SD)	N	M (SD)
Number of partners	157	.53 (1.13)	137	.63 (1.31)	135	.67 (1.25)	143	0.61 (0.96)
Inconsistent Condom Use	156	.65 (1.33)	137	.67 (1.29)	135	.81 (1.46)	143	1.13 (1.76)
Time 1								
	N	M (SD)						
Youth Self Report Total Score	158	57.04 (10.26)						

NOTE: % = percent of the sample endorsing the experience; M = mean; SD = standard deviation.

Table 2.

Correlations among independent and dependent variables

	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17
1. SA																	
2. YSR total score	.35**																
3. T2 Sexual experience	.25**	.29**															
4. T2 Number of partners	.30**	.37**	.62**														
5. T2 High risk partner	.27**	.36**	.67**	.72**													
6. T2 Condom use	.15	.17*	.65**	.60**	.66**												
7. T3 Sexual experience	.33**	.34**	.89**	.54**	.59**	.57**											
8. T3 Number of partners	.35**	.45**	.51**	.67**	.47**	.39**	.55**										
9. T3 High risk partner	.24**	.26**	.55**	.61**	.61**	.48**	.58**	.60**									
10. T3 Condom use	.11	.18*	.54**	.49**	.51**	.58**	.60**	.55**	.52**								
11. T4 Sexual experience	.29**	.38**	.80**	.49**	.52**	.54**	.90**	.49**	.61**	.48**	.56**						
12. T4 Number of partners	.18*	.32**	.48**	.67**	.50**	.41**	.53**	.60**	.52**	.43**	.54**	.66**					
13. T4 High risk partner	.18*	.32**	.46**	.49**	.43**	.30**	.49**	.38**	.52**	.43**	.54**	.66**	.56**				
14. T4 Condom use	.21*	.30**	.40**	.55**	.41**	.45**	.53**	.44**	.52**	.65**	.58**	.60**	.56**	.45**			
15. T5 Sexual experience	.27**	.32**	.66**	.40**	.44**	.42**	.75**	.40**	.43**	.44**	.84**	.46**	.45**	.48**			
16. T5 Number of partners	.05	.24**	.24**	.36**	.20*	.24**	.33**	.26**	.29**	.33**	.44**	.42**	.35**	.60**	.54**		
17. T5 High risk partner	-.01	.15	.30**	.24**	.13	.21*	.35**	.07	.35**	.32**	.38**	.30**	.51**	.47**	.48**	.63**	
18. T5 Condom use	-.02	.22**	.36**	.31**	.26**	.38**	.41**	.21*	.30**	.45**	.47**	.31**	.40**	.62**	.55**	.67**	.64**

SA = sexual abuse; YSR = Youth Self-Report (Time 1)

* $p < .05$ ** $p < .01$

Table 3.

Unconditional Growth Curve Models

Outcome Variable	Model Fit Statistics	Intercept Factor		Slope Factor		Covariance		Quad.
		M	Var (S.E.)	M	Var (S.E.)	β	M	
<i>Sexual Experience</i>								
Probit Model	$\chi^2 = 1.07$, df = 2; p > .10 CFI = 1.00; TLI = 1.00; RMSEA = .00; WRMR = .11	NA	0.99 (.04)	0.20 ***	0.02 (0.04)	.26		
<i>Number of partners</i>								
Linear Model	$\chi^2 = 7.22$, df = 5; p > .10 CFI = .96; TLI = .96; RMSEA = .05; SRMR = .07	0.53 ***	1.22 (.36)	0.04	0.08 (0.04)	-.81 *		
Quadratic Model	$\chi^2 = 3.01$, df = 4; p > .10 CFI = 1.00; TLI = 1.03; RMSEA = .00; SRMR = .05	0.52 ***	1.07 (.32)	0.11	0.00 ^a	-.76 *		-.03
<i>Inconsistent Condom Use</i>								
Linear Model	$\chi^2 = 7.26$, df = 5; p > .10 CFI = .97; TLI = .97; RMSEA = .05; SRMR = .05	0.57 ***	.96 (.27)	0.14 **	0.13 (0.06)	-.15		
Quadratic Model	$\chi^2 = .01$, df = 1; p > .10 CFI = 1.00; TLI = 1.07; RMSEA = .00; SRMR = .00	0.65 ***	.19 (.54)	-0.09	.92 (0.67)	-.33		.08 *
<i>Sex with a Risky Partner</i>								
Probit Model	$\chi^2 = 1.59$, df = 2; p > .10 CFI = 1.00; TLI = 1.00; RMSEA = .00; WRMR = .26	NA	0.91 (.26)	0.12	0.10 (0.07)	-.77 ***		

NOTE: χ^2 = chi-square statistic reflecting overall model fit (p > .05 indicates a good fit); CFI = Comparative Fit Index (.90 indicates a good fit); TFI = Tucker-Lewis Index (.90 indicates a good fit); RMSEA = Root Mean Square Error of Approximation (.05 is considered a very close fit; .05 - .10 is considered a moderate fit); WRMR = Weighted Root-Mean-Square Residual (used for binary outcomes, .9 is considered a good fit); SRMR = Standardized Root-Mean-Square Residual (used for continuous outcomes, .08 is considered a good fit).

NA = mean intercept is not estimated for binary outcomes.

^aTo obtain model fit, the variance of the slope factor in the quadratic model for number of partners was held at zero due to an estimated negative variance.

* p .05

*** p .001

Table 4.

Conditional Growth Curve Models with Sexual Abuse and Age as Covariates

Outcome Variable	Model Fit Statistics	Covariate	Path Coefficient (β)				
			Intercept (T2)	Intercept (T3)	Intercept (T4)	Intercept (T5)	Slope Quad.
Sexual Experience (Probit model)	$\chi^2 = 1.47$, $df = 3$; $p > .10$ CFI = 1.00; TLI = 1.00; RMSEA = .00; WRMR = .14	SA	.35***	.40	.32	.43	.44
		Age	.45***	.39	.45	.34	.27
Number of Partners (Linear model)	$\chi^2 = 12.38$, $df = 9$; $p > .10$ CFI = .96; TLI = .94; RMSEA = .05; SRMR = .06	SA	.34**	.30**	.25*	.14	-.35**
		Age	.18*	.21*	.25*	.27	-.04
Inconsistent Condom Use (Quadratic model)	$\chi^2 = 8.98$, $df = 3$; $p < .05$ CFI = .96; TLI = .80; RMSEA = .11; SRMR = .03	SA	.18	.24**	.16	-.00	-.13
		Age	.39***	.36***	.33***	.25**	-.03
Sex with a Risky Partner (Probit model)	$\chi^2 = 3.95$, $df = 4$; $p > .10$ CFI = 1.00; TLI = 1.01; RMSEA = .00; WRMR = .30	SA	.38***	.32**	.19	.07	-.26
		Age	.39***	.37**	.27	.16	-.18

NOTE: SA = sexual abuse. Path coefficients (β) reflect relationships between sexual abuse (SA) or age and the intercept and slope terms. Models were tested with intercepts set at each of the four time points (T2–T5), and the corresponding β s reflect the relationship between SA and the intercept at that time point.

[†]In the quadratic model, the β reflecting the relationship between covariates and the slope at T1 is reported since it changes over time. A significant relationship was found between SA and the slope at T4 (–.19, $p = .05$).

χ^2 = chi-square statistic reflecting overall model fit ($p > .05$ indicates a good fit); CFI = Comparative Fit Index (.90 indicates a good fit); TFI = Tucker-Lewis Index (.90 indicates a good fit); RMSEA = Root Mean Square Error of Approximation (.05 is considered a very close fit; .05 – .10 is considered a moderate fit); WRMR = Weighted Root-Mean-Square Residual (used for binary outcomes, .9 is considered a good fit); SRMR = Standardized Root-Mean-Square Residual (used for continuous outcomes, .08 is considered a good fit).

* $p = .05$

**

$p = .01$

$p = .001$

Conditional Growth Curve Models with Sexual Abuse, Age, and Mental Health Symptoms as Covariates

Table 5.

Outcome Variable	Model Fit Statistics	Covariate	Path Coefficient (β)				
			Intercept (T2)	Intercept (T3)	Intercept (T4)	Intercept (T5)	Slope Quad.
Sexual Experience (Probit model)	$\chi^2 = 2.44$, $df = 5$, $p > .10$ CFI = 1.00, TLI = 1.00; RMSEA = .00, WRMR = .16	SA	.29**	.31	.32	.32	.31
		Age	.34***	.30	.28	.28	.19
		YSR	.20*	.34	.31	.31	.34
Number of Partners (Linear model)	$\chi^2 = 16.02$, $df = 11$, $p > .10$ CFI = .95, TLI = .92; RMSEA = .05, SRMR = .06	SA	.23*	.11	-.01	-.01	-.34**
		Age	.13	.17	.19	.19	-.02
		YSR	.31**	.40***	.42**	.42**	-.09
Inconsistent Condom Use (Quadratic model)	$\chi^2 = 8.32$, $df = 4$, $p > .05$ CFI = .97, TLI = .86; RMSEA = .08, SRMR = .03	SA	.15	.17	-.09	-.09	-.23
		Age	.37***	.33***	.28**	.20*	-.002
		YSR	.08	.18	.25**	.25**	.08
Sex with a Risky Partner (Probit model)	$\chi^2 = 4.97$, $df = 5$, $p > .10$ CFI = 1.00, TLI = 1.00; RMSEA = .00, WRMR = .35	SA	.26**	.18	.07	-.01	-.21
		Age	.34***	.31**	.22	.14	-.12
		YSR	.32**	.35***	.31	.25	.01

NOTE: SA = sexual abuse; YSR = Youth Self-Report (Time 1). Path coefficients (β) reflect relationships between sexual abuse (SA) or age and the intercept and slope terms. Models were tested with intercepts set at each of the four time points (T2–T5), and the corresponding β s reflect the relationship between SA and the intercept at that time point.

[†]In the quadratic model, the β reflecting the relationship between covariates and the slope at T1 is reported since it changes over time. A significant relationship was found between SA and the slope at T4 (–.19, $p < .05$).

χ^2 = chi-square statistic reflecting overall model fit ($p > .05$ indicates a good fit); CFI = Comparative Fit Index (.90 indicates a good fit); TFI = Tucker-Lewis Index (.90 indicates a good fit); RMSEA = Root Mean Square Error of Approximation (.05 is considered a very close fit; .05 – .10 is considered a moderate fit); WRMR = Weighted Root-Mean-Square Residual (used for binary outcomes, .9 is considered a good fit); SRMR = Standardized Root-Mean-Square Residual (used for continuous outcomes, .08 is considered a good fit).

* $p < .05$

** $p < .01$

*** $p < .001$