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Change in Age-Specific, Psychosocial Correlates of Risky Sexual Behaviors Among Youth: Longitudinal Findings From a Deep South, High-Risk Sample

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Abstract

The current study examined psychosocial predictors of change in intercourse frequency and number of sexual partners among youth within a socio-ecological framework and assessed whether these determinants vary by stage of adolescent development. Longitudinal data were derived from a large, community study of adolescent risky behavior among predominantly high-risk, African American youth. Significant predictors of intercourse frequency for early adolescents included age, gender, self-worth, and familial factors; for older youth, age, gender, self-worth, curfews, and sense of community exerted significant effects. Among early adolescents, age, gender, self-worth, familial factors, and sense of community predicted change in the number of sexual partners in the previous year, while age, gender, self-worth, parental knowledge, curfews, and sense of community were predictive of change in the number of sexual partners in the previous year among older youth. Study implications and future directions are discussed.

Keywords

Sexual behavior; Adolescent; High-risk; Age differences

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Introduction

Research on psychosocial predictors of sexual behavior among underprivileged, African American youth is critical for addressing the increased vulnerability of this group to sexually transmitted infection (STI, Bauermeister et al. 2010a). African American youth residing in the southeastern region of the United States are particularly vulnerable to STI, as this region has witnessed a sharp increase in reported HIV infections (Reif et al. 2006). In tackling this public health concern, some investigators have underscored the importance of acknowledging age-related changes in psychosocial factors that occur during the transition from early adolescence to young adulthood, as they may create differences in risky sexual behavior (RSB) participation (Sales et al. 2012). A recent review, for example, suggested that youth initiating intercourse during early adolescence report greater levels of RSB than their older peers (Zimmer-Gembeck and Helfand 2008). Furthermore, one longitudinal study found that over an 8-year period, impoverished African American youth reported increases in their rate of RSB during the adolescent years until reaching a peak that sparked the initiation of steadily decreasing rates of RSB during young adulthood (Fergus et al. 2007).

Given the previous research in this area, we might expect that the predictors of such behaviors may also differ by developmental period. One problem with much of the research on the predictors of RSB among youth is that most studies have failed to examine age-graded differences. Among those studies that have, most concern only one type of RSB, often intercourse initiation or unprotected sex (Bauermeister et al. 2010a; Zimmer-Gembeck and Helfand 2008) or examine aggregate measures of risky sex (Fergus et al. 2007), which limits the possibility of comparing participation in different measures of RSB within the same population.

Unprotected intercourse remains one of the most commonly studied types of RSB, however; change in intercourse frequency and number of sexual partners, the latter being a reliable predictor of condom use (e.g., Davies et al. 2006), are also associated with unwanted pregnancy and STI and tend to be understudied (Crockett et al. 2006). While research has shown that, compared to their younger counterparts, older adolescents report more frequent intercourse (DeLucia et al. 2007) and greater numbers of sexual partners (Tubman et al. 1996), it is still unclear how the predictors of these behaviors vary across adolescence and predict individual change in RSB. Aside from age and ethnicity, gender remains an important influence on adolescent RSB (DiClemente et al. 2005), such that African American boys report more sexual partners (CDC 2006) and more frequent intercourse (Mandara et al. 2003) than their female peers. In an effort to address these literature gaps, the current study used a socio-ecological framework to explore developmental differences in the predictors of individual change in age-specific RSB outcomes among a sample of high-risk, African American youth.

Although scholars have empirically demonstrated the role of individual traits in sexual decision-making, more research on the influence of contextual factors is needed (DiClemente et al. 2005). Recently, attention has turned to the ability of psychosocial factors to explain health behaviors (DiClemente et al. 2005). These factors are based on Brofenbrenner's (1979) ecological model of intrapersonal and environmental determinants

of behavior, which organizes predictors of youth behavior into the domains of individual characteristics, familial factors, and peer and community influences. It is within this framework that individual personal factors and external influences are hypothesized to shape individual risk behaviors.

The impact of intrapersonal factors on adolescent sexual behavior is less understood among African American youth (Gaylord-Harden et al. 2007). One variable, in particular, that has been linked to adolescent sexual behavior, but has received little attention, is self-worth. Previous research, for example, has associated lower levels of self-worth with early intercourse initiation, teen pregnancy, and greater numbers of sexual partners (e.g., Spencer et al. 2002). Furthermore, longitudinal research on self-worth in early adolescents has shown that youth who reported low levels of self-worth at baseline were more likely to engage in RSB than their peers with higher scores on this factor at the 4-year follow-up (e.g., Crockett et al. 2006). As self-worth is often incorporated in theories focused on resiliency, it has often been conceptualized as a potential protective factor for youth residing in high-risk environments (Salazar et al. 2005). Accordingly, we expect that youth who report lower levels of self-worth will be more likely to engage in increasing amounts of sexual behavior compared to their peers with higher levels of self-worth.

In addition to intrapersonal characteristics, previous longitudinal studies have identified an association between adolescent RSB and a number of family characteristics, including parental monitoring and knowledge, as well as familial rules (e.g., Miller 2002). For early adolescents, parental monitoring appears to be particularly important, as higher levels of monitoring or familial involvement are related to a delayed onset of sexual behavior (Huang et al. 2011). In a review by Kotchick et al. (2001), low levels of parental monitoring were linked to greater numbers of sexual partners (Kotchick et al. 2001; Lansford et al. 2010). However, some research findings have suggested that, for minority youth, higher parental knowledge is only protective for early adolescents, as in one study; higher monitoring was predictive of a higher growth rate in number of sexual partners for older youth (Lansford et al. 2010). Research on the impact of familial rules on adolescent RSB has varied between males and females, as adolescent females appear to be more positively affected by rule setting (O'Donnell et al. 2008) than their male counterparts (Forste and Haas 2002). Moreover, research also indicates that perception of the parental relationship is an important predictor of adolescent sexual activity such that youth who believe their parents display less warmth initiate intercourse sooner than their peers and have more sexual partners (Gardner et al. 2011). At least one previous study has demonstrated that more positive parenting during mid-adolescence predicted decreasing participation in various RSBs (Coleyet al. 2008); however, information regarding differential engagement in certain types of RSB was unavailable due to aggregation and is needed to inform future research.

Both cross-sectional and longitudinal studies have demonstrated that adolescence constitutes a period of development during which the significance of peer perception and approval increases significantly (Gardner and Steinberg 2005). Few studies, however, have examined the influence of friendship characteristics on adolescent sexual behavior, as there may be differences in reported levels of RSB depending on whether youth experience peer pressure or have supportive friendships. Many adolescents, for instance, report that their friends

encourage or pressure them to engage in risky behaviors, including sexual behavior (Jessor et al. 1995). Consistently, youth who associate with sexually active peers report earlier ages of intercourse initiation (Buhi and Goodson 2007). Furthermore, one study found that, among other predictors, African American race and association with deviant peer groups predicted increasing numbers of sexual partners over time (Lansford et al. 2010). These and similar studies further suggest that peer group likely influences adolescent sexual behavior. It is also possible that perception of peer support may influence adolescent sexual behavior; however, few research studies have examined this relation. The results of one longitudinal study suggested that African American females who reported higher levels of peer support were more likely to report more frequent intercourse than their peers (Lauritsen 1994).

Researchers agree that a sense of connection to others is a basic psychological need and satisfaction of this need leads to positive outcomes (Jose et al. 2012). Given this fact, one would expect that the neighborhood wherein one resides could both directly and indirectly shape the perceptions, feelings, and behaviors of adolescents (e.g., Di-Clemente 2000). One study, for example, found that neighborhood disadvantage, as determined by census data, was related to changes in intercourse initiation but not condom use among older adolescents (Bauermeister et al. 2010b). While the most common method of examining neighborhoods has been through the use of objective measures such as US census tracks (Browning et al. 2004), recent research has focused on perception as a way to evaluate the relation between neighborhoods and adolescent outcomes, such as educational attainment and performance (Bass and Lambert 2004). One important construct, sense of community, which is sometimes referred to as neighborhood connectedness, has been linked to adolescent risky behavior (Browning et al. 2004); however, to our knowledge, there is no research that has examined the relation between particular neighborhood sentiments and change in RSB over time. It is possible that RSB among impoverished African American youth is associated with living in unstable and stressful environments, thereby increasing hopelessness that could lead to greater participation in RSB (Bolland 2003).

Our study represents an extension of previous research that has focused on cross-sectional data, simply examined RSB outcomes by analyzing the overall mean level of RSB across waves, included only two waves of data, or did not examine developmental differences in predictors of outcomes (Capaldi et al. 2002). To date, four major gaps exist in the literature on youth RSB. First, no published studies on this topic have used longitudinal data from impoverished, high-risk, African American youth from the Deep South. Second, this study extends previous research in that it focuses on change in understudied sexual outcomes, intercourse frequency and number of partners. Third, little is known about the utility of a number of psychosocial constructs, particularly school support and sense of community. Finally, there are few published studies that have substantiated whether psychosocial factors for youth RSB exert age-specific effects (Lauritsen 1994; Miller et al. 2002). In addressing these gaps in the literature, the present study used multiple waves of longitudinal data from a sample of primarily poor, high-risk, African American youth to predict change in frequency of sexual intercourse and number of sexual partners. Attention was directed at assessing whether the psychosocial factors examined exerted outcome-specific and age-specific effects.

Method

Sample

Data were derived from 14 waves of annual survey data collected between 1998 and 2011 as part of the Mobile Youth Survey (MYS), a large, community-based study of adolescent risky behavior (Bolland 2003). Due to the homogeneity of the sample, we were able to control for the effects of neighborhood poverty using a community epidemiological framework (Kellam and Van Horn 1997). Respondents were recruited from 13 high-poverty neighborhoods in Mobile, Alabama and the target age for recruitment was between 10 and 18 years. Analyses in the present study were limited to youth who were between ages 11 and 18. The mean age of the sample was 12.29 years. Participants across waves were mostly African American or mixed race (about 99 %), low-income (85 % qualified for free or reduced lunch), and were approximately gender-balanced (51 % male). More than half (n = 7) of the 13 neighborhoods constituted public housing.

Procedure

The research team was provided with a list of public housing residences in which youth were listed on the lease. Of the households in which youth resided, 50 % were randomly selected and contacted. As there was no equivalent list for those living in non-public housing neighborhoods, half of the residences in the targeted neighborhoods were randomly selected and contacted to determine if there were youth residing in the household. Additionally, youth outside of the participating neighborhoods were recruited by means of responding to posted fliers and word of mouth. After obtaining parental consent and youth assent, the survey was administered to 15–30 youth in a group format. To bolster the validity of responses, survey items were written at the 5th grade reading level and, for younger participants and those experiencing difficulties, the questions were read aloud and additional assistance was provided as necessary. Participants were informed of measures taken to ensure confidentiality and they were paid $10 for their participation.

In 1998, 1,771 youth were surveyed. For targeted households, the response rate was between 60 and 70 %. The sampling frame was estimated by establishing the number of eligible participants living in targeted residences who could not be contacted. The following year, researchers made efforts to contact previous participants and a new random sample was actively recruited. During subsequent years, the researchers engaged in a similar recruitment and retention procedure. By 2011, a total of 12,448 youth were surveyed and 64.7 % of them participated in more than one wave of data collection; the mean number of time points for each youth was 2.91. Table 1 includes information on the demographic distribution of MYS participants at baseline. Across waves, demographics were consistent with baseline reports. Additional information concerning the unique characteristics of the MYS sample has been published elsewhere (see Bolland et al. 2005).

Between 1998 and 2005, the MYS contained 294 questions that focus on a variety of psychosocial characteristics. Many of the items were adapted from existing scales to address the unique qualities of respondents, such as the wide age range and the use of street vernacular. The survey also includes questions measuring the respondent’s engagement in

risk behaviors (e.g., sexual intercourse, unprotected intercourse), feelings (self-worth, caring, hopelessness, worry, and callousness), contextual factors (e.g., maternal warmth, parental knowledge, peer and school support), and sense of community. Beginning in 2006, additional questions were added and respondents were paid $15.

The survey structure enabled the researchers to measure the consistency of responses across the measured behavioral variables (see Bolland 2003). Respondents who had three or more inconsistent response patterns in a given year were excluded from that year's analyses. Depending on the wave, inconsistencies resulted in the exclusion of 6.5–14.4 % of respondents.

Dependent Variables

In the current study, we examined two dependent variables: frequency of intercourse and number of sexual partners in the previous year. Intercourse frequency was measured using three items; participants were asked whether they had engaged in sexual intercourse in the past 90, 30, or 7 days. Participants answer choices included *No*, *Yes, just once*, and *Yes, more than once*. By combining responses, we created a frequency-recency measure for sexual intercourse that ranged from 0 (*never had sex*) to 7 (*had sex more than once in the past 7 days*). We measured number of sexual partners in the previous year by asking participants how many different sexual partners they had in the past 12 months. Responses ranged from 0 (*no sexual partners in the last year*) to 5 (*5 or more different sexual partners in the past year*).

Independent Variables

A total of 13 psychosocial variables were used to predict frequency of intercourse and number of sexual partners in the previous year. These variables originate from the five socio-ecological domains of influence: the individual (self-worth), family (maternal warmth, parental knowledge, curfew), peer (friend support), and neighborhood (sense of community) domains of influence.

Intrapersonal Factors—The following variables comprised the intrapersonal factors domain: age, gender, and self-worth. Measurements of age and gender (0 = male, 1 = female) were based on self-report. Self-worth was measured using eight items adapted from the Perceived Competence Scale for Children (Harter 1982). Respondents were asked to agree or disagree with each statement. The responses were summed to create the self-worth scale, where scores ranged from 0 (*no self-worth*) to 8 (*high self-worth*). The internal reliability was consistent across waves, ranging between 0.62 and 0.65.

Familial Influence—The following variables comprised the familial influence domain: maternal warmth, parental knowledge, and curfew. Maternal warmth (α = 0.61–0.71) was assessed using six items adapted from the Warmth towards Mother scale (Lamborn et al. 1991), which assesses the quality of the parent–child relationship from the adolescent's perspective. Responses ranged from 0 (*no perceived warmth*) to 6 (*high level of maternal warmth*). Parental knowledge (α = 0.61–0.74) was measured by six items adapted from a parental monitoring scale (Lamborn et al. 1991). Two items asked respondents to agree or

disagree with statements about their parents' knowledge of their behavior. Four items asked respondents to rate their parents' knowledge of their whereabouts. Responses ranged from 0 (*not applicable*) to 3 (*they know a lot*). These six items were summed, where scores ranged from 1 (*not knowledgeable*) to 16 (*very knowledgeable*). Four items measured participants' perceptions of the existence of a curfew ($\alpha = 0.63–0.71$). Respondents were asked to agree or disagree with statements intended to assess the degree to which they believed that their parents had set curfews, where scores ranged from 0 (*no curfew*) to 5 (*more limits or curfews*).

Peer Influence—We assessed peer influence using a measure of friend support ($\alpha = 0.72–0.74$) was measured using six items from the Peer Attachment Scale of the Inventory of Parent and Peer Attachment (Armsden and Greenberg 1987). Participants agreed or disagreed with statements assessing their feelings regarding general feelings of support, trust, and support from friends (e.g., "I trust them," "They accept me as I am," and "I feel alone when I am with them"). Scores ranged from 0 (*no friend support*) to 6 (*high friend support*).

Neighborhood Factors—Sense of community ($\alpha = 0.60–0.71$) was assessed using six items from the Psychological Sense of Community Scale (Glynn 1981). Using an agree-disagree response format, this measure focuses on the participant's positive feelings about his or her neighborhood. Items such as "there are people in my neighborhood, other than my family, who really care about me" and "If I moved away from my neighborhood, I would be sorry to leave" were included. Response choices ranged from 0 (*no sense of community*) to 6 (*very strong sense of community*).

Attrition and Missing Data

Although year-to-year attrition was modest (≈30 %), study-wise attrition (i.e., across multiple waves) was significant. Bolland (2012), however, determined that dropouts between times $t - 1$ and t did not differ from non-dropouts in terms of several school variables, determined from school records at time t (i.e., standardized test scores, school behavioral violations); nor did dropouts differ from non-dropouts in terms of their MYS responses measured at time $t - 1$. Thus, there is evidence that missing data can be treated as missing at random (MAR), although this assumption can never be demonstrated definitively. Bolland (2012) also found that MYS participants living in MYS neighborhoods differed significantly (although effect sizes were small) from non-participants living in the same neighborhoods in terms of race and free/reduced cost lunch status, with a greater number of MYS participants being both African American and qualifying for free lunch than nonparticipants; thus, the MYS was successful in recruiting the most vulnerable adolescents from these areas. When race and lunch status were statistically controlled, there were no consistent differences between MYS participants and nonparticipants in terms of their standardized school test scores, school behavioral violations, or school disciplinary actions.

Analysis Plan

Descriptive statistics (mean, standard deviation, bivariate correlations) were used to assess participant characteristics and examine the quality of the data. To determine whether the

predictors of intercourse frequency and number of sexual partners in the previous year varied by age, we divided participants into two subsamples, early adolescent youth who were 9–13 years of age and older teens who were 14–19 years of age. The cut-point (13/14 years) used to disaggregate younger from older youth is a threshold that has been used by a number of other researchers (e.g., Howell 2010). With age and gender serving as covariates, we employed a multilevel linear modeling technique that included both fixed and random factors, with a first-order autoregressive covariance structure, with participants being grouped at each wave.

We used SAS PROC MIXED with repeated measures and restricted maximum likelihood (REML) for the first set of analyses (involving frequency/recency of sexual intercourse as the dependent variable. When missing data are MAR, REML provides ideal estimates (e.g., best linear unbiased estimates). For the second set of analyses, where the dependent variable involves a count (i.e., number of sexual partners during the past year), we first attempted to run a generalization of the linear mixed model (using SAS PROC GLIMMIX with pseudo likelihood, a log link function, and a poisson error distribution). As is often the case with such analyses, however, the model did not converge. As an alternative, we used a generalized estimating equation (GEE) framework (e.g., Diggle et al. 2002), as implemented in SAS PROC GENMOD, again with a log link function and a poisson error distribution. The main difference between these two approaches is that linear mixed models estimate random as well as fixed effects, whereas GEE models estimate only fixed effects (while statistically controlling for non-independence). As is the case for REML, pseudo likelihood techniques provide unbiased estimates when missing data are ignorable.

Altogether, we conducted four analyses. The first set modeled intercourse frequency at time *t* as a function of age, gender, self-worth, friend support, maternal warmth, parental knowledge, sense of community, and frequency of intercourse, all measured at $t - 1$. The initial model indicated that there were significant interactions between predictors and age, suggesting that the slopes for younger youth and older youth were significantly different. As a result, this analysis was conducted separately for younger (age ≤ 13) and older (age ≥ 14) youth. The second set of analyses modeled the number of sexual partners at time *t* as a function of gender, self-worth, friend support, maternal warmth, parental knowledge, curfew, sense of community, and number of sexual partners, all measured at $t - 1$; again this analysis was conducted separately for younger (age ≤ 13) and older (age ≥ 14) youth due to significant differences in slopes between the two age groups. Gender is constant at both $t - 1$ and *t* in all models. Additionally, in all of these analyses, dependent variables at *t* are included as independent variables at $t - 1$.

This cross-lagged panel framework (Funatogawa et al. 2007) has several benefits (see Bolland et al. 2007, for a more extended discussion). First, by measuring the independent variables at $t - 1$ and the dependent variable at *t* and by controlling for the dependent variable at $t - 1$, it allows stronger causal inference than a model that simply examines contemporaneous effects (Granger 1969). Second, by controlling for the dependent variable at $t - 1$, it reduces the potential contaminating effects of unmeasured variables (which should have a similar effect on the dependent variable at both $t - 1$ and at *t*) (Curran and Bauer 2011). Third, it allows for a simpler interpretation of the findings: slope coefficients

reflect the weight of each predictor on residualized *change* in the dependent variable (Van Meter 1974). All of these benefits, however, contribute to making cross-lagged panel analyses more conservative than similar contemporaneous analyses (Keele and Kelly 2006).

In these analyses, we estimated the degrees of freedom using a procedure initially introduced by Satterwaite (1941) and further developed by Kenward and Roger (1997). The procedure involves the inflation of estimates of the variance–covariance matrix of the random and fixed effects. We also assumed a first order autoregressive covariance structure.

Results

We combined the data across waves to construct the bivariate correlations displayed in Table 2. While the correlations between most of the variables were fairly low, there were some exceptions. Specifically, curfew and number of sexual partners in the previous year were linked to intercourse frequency. To account for the potential effects of age and gender, we then assessed partial correlations. As indicated in Table 2, the controls did not significantly affect the results.

Frequency of Intercourse

Table 3 presents the results of the age-specific models for frequency of intercourse. Age and gender were significant predictors of intercourse frequency, such that, compared to their respective counterparts, older youth and males tended to report engaging in intercourse with increasing frequency and recency. Among early adolescents, lower scores on self-worth, greater maternal warmth, less parental knowledge, and fewer curfews predicted with engaging in intercourse with increasing frequency and recency. For older adolescents, a slightly different set of predictors emerged: although lower scores on self-worth and fewer curfews continued to predict greater changes in the frequency and recency of intercourse, a greater sense of community predicted an increase in the frequency and recency of intercourse.

Number of Sexual Partners in the Previous Year

Table 4 presents the age-specific results for correlates of number of sexual partners in the previous year using Poisson regression. Similar to the previous model, age and gender were significant predictors of change in the number of sexual partners, such that, compared to their respective counterparts, older youth and males were more likely to report a greater increase in their number of sexual partners than in the previous year. With the exception of friend support, all predictors in the model for younger adolescents were significant, such that youth who reported lower self-worth, perceived their parents as less knowledgeable of their whereabouts, and had fewer curfews reported greater increases in their number of sexual partners. Furthermore, younger adolescents reporting greater maternal warmth and a stronger sense of community were more likely to report increases in their numbers of sexual partners. For older adolescents, there was a significant amount of overlap between predictors, with one exception. Specifically, as in the younger sample, older adolescents who reported lower self-worth, perceived their parents as less knowledgeable of their whereabouts, and had fewer curfews reported greater increases in their sexual partners.

While a greater sense of community was related to an increase in number of sexual partners, maternal warmth was not significant for older youth.

Multicollinearity

It is notable that the signs of the coefficients for maternal warmth and sense of community changed in an unexpected direction in the model, such that these variables were negatively related to sexual behavior when we examined the bivariate correlations but were positive predictors of sexual behavior within the model. As a result of the changes in the direction of these variables, it was unclear whether the significance of maternal warmth and sense of community were spurious in nature or due to unique factors within this sample. As such findings could indicate multicollinearity, we conducted additional analyses to examine the stability of the models and detect possible multicollinearity. Our findings suggest that the results of the models were not due to multicollinearity for several reasons. First, given the fact that the correlations among predictor variables are very small, it is unlikely that correlations among predictor variables impacted the results of the model. Second, as multicollinearity could result from a linear relation among 3 variables, we performed a series of analyses. First, we re-ran all four models alternating between the inclusion of either parental knowledge or maternal warmth to evaluate the stability of the model and found no significant changes, especially with respect to the signs of the other coefficients. We selected these two variables because they had a slightly higher (but still small) correlation with each other. Third, we examined the variance inflation factors (VIF) of the independent variables included in the models iteratively, as the VIF quantifies the severity of multicollinearity in regression analyses. The VIFs for each variable ranged from 1.01 to 1.71, which is well below the suggested cutoff value of 5 (Hair et al. 2006). Lastly, we replicated the original two models that included interaction terms between each predictor and age. Within these models, we included a centered interaction term between parental knowledge and maternal warmth. For both intercourse frequency ($p = .71$) and number of sexual partners ($p = .77$), the interactions were not significant. For intercourse frequency, signs of the coefficients for maternal warmth ($F(1, 12{,}000) = 2.41$, $p = .12$) and sense of community ($F(1, 10{,}000) = 8.66$, $p < .05$) did not change. The same was true for number of sexual partners, the standardized signs did not change for either maternal warmth ($z = 0.0002$, $p = .99$) or sense of community ($z = 0.007$, $p = .21$), although neither was significant.

Discussion

This study assessed the degree to which psychosocial predictors of change in intercourse frequency and number of sexual partners differed by age among primarily African American youth from impoverished backgrounds. Our results indicated that older youth and males tended to report intercourse with increasing frequency over time. These findings are consistent with previous research on other types of RSB, such as intercourse initiation, that suggested that African American males and older youth are at increased risk for initiating intercourse at an earlier age than their peers from other ethnic backgrounds (see Zimmer-Gembeck and Helfand 2008).

From a developmental perspective, older adolescents are expected to engage in more and increasing amounts of intercourse not only because they tend to have more opportunities to be with peers without supervision (Mandara et al. 2003), but they also appear to be influenced by biological characteristics (e.g., puberty) that are strongly associated with changes in motivation—increases in sensation-seeking and greater interest in peers and potential sexual partners—which could influence an individual's sexual decision-making depending on the social context (Forbes and Dahl 2010). Cultural differences in gender ideologies could explain differences in intercourse frequency and number of sexual partners in the previous year. Sexuality is a social construct that is greatly influenced by cultural factors that often guide one's views of masculinity and femininity and appropriate gender roles. For instance, in many cultures, males are expected to engage in more risky behaviors and those who do not participate may be viewed as less masculine (Laub et al. 1999).

Sexual Behavior Among Early Adolescents

The results of this investigation indicated that younger adolescents who reported lower levels of self-worth had a greater likelihood of engaging in intercourse with increasing frequency and recency. Our findings are consistent with previous studies that have linked self-worth to adolescent sexual behavior, with some studies suggesting that self-worth may mediate the relation between other psychosocial factors and sexual risk (e.g., Salazar et al. 2005). Additionally, early adolescents who reported fewer curfews and perceived their parents as less knowledgeable of their whereabouts were more likely than their counterparts to engage in intercourse with increasing frequency and recency. This finding reinforces a sizable body of literature that underscores the significance of parental factors in protecting adolescents from involvement in risky behavior (Siebenbruner et al. 2007). Parents are able to exercise a greater degree of control over the behavior of younger adolescents, as they often have the ability to directly monitor their younger children's behaviors due to less time away from home (Kerr et al. 2010). The results of our study could suggest that parents who are less knowledgeable of their children's activities have less control of their behaviors and are, thus, less likely to have the ability to protect their children from risks posed by environmental threats.

It is notable that younger adolescents who reported greater perceptions of maternal warmth also reported greater increases in their intercourse frequency-recency. This finding, however, is contrary to expectations and previous findings that have suggested that maternal warmth was related to decreases in adolescent sexual behavior (e.g., Gardner et al. 2011). As previously mentioned, it is unclear whether this finding is spurious in nature or if it suggests that maternal warmth is significantly different and independent from parental monitoring, such that higher levels of maternal warmth does not protect younger adolescents from sexual risk and youth may be interpreting parental permissiveness as warmth (e.g., Cauffman et al. 2008).

Regarding changes in the number of sexual partners, our model revealed that the significant predictors of change in intercourse frequency-recency were identical to the predictors of change in number of sexual partners, with one exception. Unlike the intercourse frequency-recency model, we found that a greater sense of community predicted increases in number of

sexual partners for older adolescents, but was not a significant predictor of change in intercourse frequency-recency for the younger group. This finding may be contrary to expectations, as community cohesion and connectedness has been conceptualized as a protective influence in the lives of youth on a variety of other health behaviors (e.g., Whitlock 2007) and to our knowledge, no other studies have examined the relation between sentiments towards one's neighborhood and adolescent sexual behavior. Similar to issues regarding parental knowledge and curfews, it is possible that youth who report stronger community connections, or stronger connections to individuals in their community, have a greater likelihood of spending more time outside the home and have greater opportunities to engage in unsupervised activities, thereby increasing their sexual risk.

Sexual Behavior Among Older Adolescents

Our study indicated that, for older adolescents, lower self-worth and fewer curfews predicted greater changes in intercourse frequency and recency, which overlapped with the model for younger adolescents. Furthermore, a greater sense of community was also predictive of greater changes in intercourse frequency and recency. The significant predictors of change in intercourse frequency-recency were identical to the predictors of change in number of sexual partners, with one exception. Although not significant in the intercourse frequency-recency model, a perception of their parents as being less knowledgeable of their activities and whereabouts significantly predicted greater changes in number of sexual partners. For older youth, parental knowledge may be viewed as indication that their parents care about them and may be protective given the challenge and instability of this developmental period (e.g., Padilla-Walker et al. 2008). Furthermore, it is also possible that when youth perceive their parents as more knowledgeable, they choose to engage in fewer risk behaviors and may be more likely than their counterparts to share information with their parents that might further protect them from risk behaviors (Padilla-Walker et al. 2008).

Limitations

We have identified three notable limitations to this study. First, we cannot be certain that the results of this study are generalizable beyond a primarily low-income, southern African American sample. However, the uniformity of the socioeconomic and ethnic characteristics of the sample allowed the researchers to investigate the psychosocial influences within a high-risk segment of the US population. Second, our operationalization of RSB could be perceived as a study limitation, as condom use is one of the most frequently used indicators of sexual risk. However, as previously mentioned, intercourse frequency and number of sexual partners in the previous year, although understudied, are significant risk factors for youth. Finally, collecting self-report data could be limiting in that we are unable to verify the accuracy of the information reported, which could lead to questions regarding internal and construct validity.

Conclusions

The findings from the current investigation extend the literature base in several ways. First, to our knowledge, this is the first study that examined age-specific, psychosocial predictors

of change in specific RSBs using data from impoverished, high-risk, African American youth from the Deep South. Our sample appears to be particularly at-risk, as the reported levels of sexual behaviors are significantly higher than those of nationally representative and diverse samples (e.g., Mason et al. 2011; Moilanen et al. 2010). We found significant differences in the sexual behavior of males and females, such that males reported greater changes in intercourse frequency and greater increases in number of sexual partners than females. Additionally, our results suggest that the psychosocial predictors of RSB not only vary by age, but also vary by type of behavior. Furthermore, our results also suggest that, overall, the significance of socio-ecological domains on risk behavior is stable across developmental level, such that the individual and familial, and community domains are important for both older and younger adolescents. However, it is notable that there were variations in the significance a several variables depending on developmental level. These findings could indicate that intervention and prevention programs designed to delay (or outright prevent) the initiation and continuation of RSB among youth should be targeted to both developmental level and RSB outcome, as programs that are designed to be universally administered to all youth, regardless of stage of adolescent development may be less effective.

This study examined psychosocial predictors of adolescent RSB using a socio-ecological framework. It is notable that this study does not represent a test of the model, as we did not examine associations between levels of the predictors. Future research should determine whether statistical interactions between variables found within and across ecological domains exist. For example, examining the influence of gender and age of psychosocial predictors of RSB by outcome could further inform intervention and prevention programs. The identification of such moderating processes could further advance research in this area.

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References

Armsden GC, Greenberg MT. The inventory of parent and peer attachment: Individual differences and their relationship to psychological well-being in adolescents. Journal of Youth and Adolescence. 1987; 16:427–454. [PubMed: 24277469]

Bass JK, Lambert SF. Urban adolescents? Perceptions of their neighborhoods: An examination of spatial dependence. Journal of Community Psychology. 2004; 32:277–293.

Bauermeister JA, Zimmerman MA, Caldwell CH. Neighbhorhood disadvantage and changes in condom use among African American adolescents. Journal of Urban Health: Bulletin of the New York Academy of Medicine. 2010a; 88:66–83.10.1007/s11524-010-9506-9 [PubMed: 21161414]

Bauermeister JA, Zimmerman MA, Caldwell C, Xue Y, Gee GC. What predicts sex partner age differences among African American youth? A longitudinal study from adolescence to young adulthood. Journal of Sex Research. 2010b; 47:330–344.10.1080/00224490903015850 [PubMed: 19517294]

Bolland JM. Hopelessness and risk behavior among adolescents living in high-poverty inner-city neighborhoods. Journal of Adolescence. 2003; 26:145–158.10.1016/S0140-1971(02)00136-7 [PubMed: 12581723]

Bolland, AC. Unpublished Doctoral Dissertation. Tuscaloosa: University of Alabama; 2012. Representativeness two ways: An assessment of representativeness and missing data mechanisms in a study of an at-risk population.

Bolland JM, Bryant CM, Lian BE, McCallum DM, Vazsonyi AT, Barth JM. Development and risky behavior among African American, Caucasian, and mixed-race adolescents living in high poverty inner-city neighborhoods. American Journal of Community Psychology. 2007; 40:230–249. [PubMed: 17932741]

Bolland JM, Lian BE, Formichella CM. The origins of hopelessness among inner-city African American adolescents. American Journal of Community Psychology. 2005; 36:293–305.10.1007/s10464-005-8627-x [PubMed: 16389501]

Bronfenbrenner, U. The ecology of human development. Cambridge, MA: Harvard University Press; 1979.

Browning CR, Leventhal T, Brooks-Gunn J. Neighborhood context and racial differences in early adolescent sexual activity. Demography. 2004; 41:697–720. [PubMed: 15622950]

Buhi ER, Goodson P. Predictors of adolescents sexual behavior and intention: A theory-guided systematic review. Journal of Adolescent Health. 2007; 40:4–21. [PubMed: 17185201]

Capaldi DM, Stoolmiller M, Clark S, Owen LD. Heterosexual risk behaviors in at-risk young men from early adolescence to young adulthood: Prevalence, prediction, and association with STD contradiction. Developmental Psychology. 2002; 38:394–406. [PubMed: 12005382]

Cauffman E, Farruggia SP, Goldweber A. Bad boys or poor parents: Relations to female juvenile delinquency. Journal of Research on Adolescence. 2008; 18:699–712. [PubMed: 19920878]

Centers for Disease Control and Prevention. The global HIV/AIDS pandemic, 2006. 2006. Retrieved September 22, 2011, from http://www.cdc.gov/mmwr/preview/mmwrhtml/mm5531a1.htm

Coley RL, Medeiros BL, Schindler HS. Using sibling differences to estimate effects of parenting on adolescent sexual risk behaviors. Journal of Adolescent Health. 2008; 43:133–140. [PubMed: 18639786]

Crockett LJ, Moilanen KL, Raffaelli M, Randall BA. Psychological profiles and adolescent adjustment: A person-centered approach. Development and Psychopathology. 2006; 18:195–214.10.1017/S0954579406060111 [PubMed: 16478559]

Curran PJ, Bauer DJ. The disaggregation of within-person and between-person effects in longitudinal models of change. Annual Review of Psychology. 2011; 62:583–619.10.1146/annurev.psych.093008.100356

Davies SL, DiClemente RJ, Wingood GM, Person SD, Dix ES, Harrington K, et al. Predictors of inconsistent contraceptive use among adolescent girls: Findings from a prospective study. Journal of Adolescent Health. 2006; 39:43–49. [PubMed: 16781960]

DeLucia C, Paikoff RL, Holmbeck GN. Individual growth curves of frequency of sexual intercourse among urban, adolescent, African American youth: Results from the CHAMP basic study. Social Work in Mental Health. 2007; 5:59–80.

DiClemente, RJ. Looking forward: Future directions for HIV prevention research. In: Peterson, JL.; DiClemente, RJ., editors. Handbook of HIV prevention. New York, NY: Kluwer/Plenum; 2000. p. 311-324.

DiClemente RJ, Salazar LF, Crosby RA, Rosenthal SL. Prevention and control of sexually transmitted infections among adolescents: The importance of a socio-ecological perspective—a commentary. Public Health. 2005; 119:825–836.10.1016/j.puhe.2004.10.015 [PubMed: 15913678]

Diggle, P.; Heagerty, P.; Liang, K.; Zeger, S. Analysis of longitudinal data. Oxford: Oxford University Press; 2002.

Fergus S, Zimmerman MA, Caldwell CH. Growth trajectories of sexual risk behavior in adolescence and young adulthood. American Journal of Public Health. 2007; 97:1096–1101.10.2105/AJPH.2005.074609 [PubMed: 17463379]

Forbes EE, Dahl RE. Pubertal development and behavior: Hormonal activation and motivational tendencies. Brain and Cognition. 2010; 72:66–72.10.1016/j.bandc.2009.10.007 [PubMed: 19942334]

Forste R, Haas DW. The transition of adolescent males to first sexual intercourse: Anticipated or delayed? Perspectives on Sexual and Reproductive Health. 2002; 34:184–190. [PubMed: 12214908]

Funatogawa I, Funatogawa T, Ohashi Y. An autoregressive linear mixed effects model for the analysis of longitudinal data which show profiles approaching asymptotes. Statistics in Medicine. 2007; 26:2113–2130. [PubMed: 16900564]

Gardner M, Martin A, Brooks-Gunn J. Exploring the link between caregiver affect and adolescent sexual behavior: Does neighborhood disadvantage matter. Journal of Research on Adolescence. 2011; 22:135–149. [PubMed: 22408364]

Gardner M, Steinberg L. Peer influence on risk taking, risk preference, and risky decision making in adolescence and adulthood: An experimental study. Developmental Psychology. 2005; 41:625–635. [PubMed: 16060809]

Gaylord-Harden NK, Ragsdale BL, Mandara J, Richards MH, Petersen AC. Perceived support and internalizing symptoms in African American adolescents: Self-esteem and ethnic identity as mediators. Journal of Youth and Adolescence. 2007; 36:77–88.10.1007/s10964-006-9115-9

Glynn TJ. Psychological sense of community: Measurement and application. Human Relations. 1981; 34:780–818.

Granger CWA. Investigating causal relations by econometric models and cross-spectral methods. Econimetrica. 1969; 37:424–438.

Hair, JF.; Anderson, R.; Tatham, RL.; Black, WC. Multivariate data analysis. Upper Saddle River, NJ: Prentice Hall; 2006.

Harter S. The perceived competence scale for children. Child Development. 1982; 53:87–97.

Howell, RJ. Sequencing and prediction of adolescent soft drug initiation: Systematic review, quantitative investigation, and dual cross-validation. Boca Raton, FL: Universal Publishers; 2010.

Huang DYC, Murphy DA, Hser YI. Parental monitoring during early adolescence deters adolescent sexual initiation: Discrete-time survival mixture analysis. Journal of Child and Family Studies. 2011; 20:511–520.10.1007/s10826-010-9418-z [PubMed: 21836663]

Jessor R, Van Den Bos J, Vanderryn J, Costa F, Turbin M. Protective factors in adolescent problem behavior: Moderator effects and developmental change. Developmental Psychology. 1995; 31:923–933.10.1037//0012-1649.31.6.923

Jose PE, Ryan N, Pryor J. Does social connectedness promote a greater sense of well-being in adolescence over time? Journal of Research on Adolescence. 2012; 22:235–251.10.1111/j.1532-7795.2012.00783.x

Keele L, Kelly NJ. Dynamic models for dynamic theories: The ins and outs of lagged dependent variables. Political Analysis. 2006; 14:186–205.

Kellam SG, Van Horn YV. Life course development, community epidemiology, and preventive trials: A scientific structure for prevention research. American Journal of Community Psychology. 1997; 25:177–188. [PubMed: 9226862]

Kenward MG, Roger JH. Small sample inference for fixed effects from restricted maximum likelihood. Biometrics. 1997; 53:983–997.10.2307/2533558 [PubMed: 9333350]

Kerr M, Stattin H, Burk WJ. A reinterpretation of parental monitoring in longitudinal perspective. Journal of Research on Adolescence. 2010; 20:39–64.10.1111/j.1532-7795.2009.00623.x

Kotchick BS, Shaffer A, Miller KS, Forehand R. Adolescent sexual risk behavior: A multi-system perspective. Clinical Psychology Review. 2001; 21:493–519.10.1016/S0272-7358(99)00070-7 [PubMed: 11413865]

Lamborn SD, Mounts NS, Steinberg L, Dornbusch S. Patterns of competence and adjustment among adolescents from authoritative, authoritarian, indulgent, and neglectful families. Child Development. 1991; 62:1049–1065.10.2307/1131151 [PubMed: 1756655]

Lansford JE, Yu T, Erath SA, Petit GS, Bates JE, Dodge KA. Developmental precursors of number of sexual partners from ages 16 to 22. Journal of Research on Adolescence. 2010; 20:651–677. [PubMed: 20823951]

Laub C, Somera DM, Gowen LK, Diaz RM. Targeting risky gender ideologies: Constructing a community-driven, theory-based HIV prevention intervention for youth. Health Education & Behavior. 1999; 26:185–199. [PubMed: 10097963]

Lauritsen JL. Explaining race and gender differences in adolescent sexual behavior. Social Forces. 1994; 72:859–883.10.2307/2579784

Mandara J, Murray CB, Bangi AK. Predictors of African American adolescent sexual activity: An ecological framework. Journal of Black Psychology. 2003; 29:337–356.10.1177/0095798403254214

Mason WA, Hitch JE, Kosterman R, McCarty CA, Herrenkohl TI, Hawkins JD. Growth in adolescent delinquency and alcohol use in relation to young adult crime, alcohol use disorders, and risky sex: A comparison of youth from low- versus middle-income backgrounds. Journal of Child Psychology and Psychiatry. 2011; 51:1377–1385. [PubMed: 20659188]

Miller BC. Family influences on adolescent sexual and contraceptive behavior. Journal of Sex Research. 2002; 39:22–26.10.1080/00224490209552115 [PubMed: 12476252]

Miller AL, Notaro PC, Zimmerman MA. Stability and change in internal working models of friendship: Associations with multiple domains of urban adolescent functioning. Journal of Social and Personal Relationships. 2002; 19:233–259.10.1177/0265407502192004

Moilanen KL, Crockett LJ, Raffaelli M, Jones BL. Trajectories of sexual risk from middle adolescence to early adulthood. Journal of Research on Adolescence. 2010; 20:114–139.

O'Donnell L, Stueve A, Duran R, Myint-U A, Agronick G, Doval AS, et al. Parenting practices, parents' underestimation of daughters' risks and alcohol and sexual behaviors of urban girls. Journal of Adolescent Health. 2008; 42:496–502. [PubMed: 18407045]

Padilla-Walker LM, Nelson LJ, Madsen SD, Barry CM. The role of perceived parental knowledge on emerging adults' risk behaviors. Journal of Youth and Adolescence. 2008; 37:847–859.

Reif S, Geonnotti KS, Whetten K. HIV infection and AIDS in the Deep South. American Journal of Public Health. 2006; 96:970–973. [PubMed: 16670228]

Salazar LF, Crosby RA, DiClemente RJ, Wingood GM, Lescano CM, Brown LK, et al. Self-esteem and theoretical moderators of safer sex among African American female adolescents: Implications for sexual risk reduction interventions. Health Education & Behavior. 2005; 32:413–427. [PubMed: 15851547]

Sales JM, Brown JL, DiClemente RJ, Davis TL, Kottke MJ, Rose ES. Age differences in STDs, sexual behaviors, and correlates of risky sex among sexually experienced adolescent African-American females. Journal of Pediatric Psychology. 201210.1093/jpepsy/jsr076

Satterwaite FF. Synthesis of variance. Psychometrika. 1941; 6:309–316.

Siebenbruner J, Zimmer-Gembeck MJ, Egeland B. Sexual partners and contraceptive use: A 16-year prospective study predicting abstinence and risk behavior. Journal of Research on Adolescence. 2007; 17:179–206.10.1111/j.1532-7795.2007.00518.x

Spencer JM, Zimet GD, Aalsma MC, Orr DP. Self-esteem as a predictor of initiation of coitus in early adolescents. Pediatrics. 2002; 109:581–584. [PubMed: 11927699]

Tubman JG, Windle M, Windle RC. Cumulative sexual intercourse patterns among middle adolescents: Problem behavior precursors and concurrent health risk behaviors. Journal of Adolescent Health. 1996; 18:182–191.10.1016/1054-139X(95)00128-F [PubMed: 8777194]

Van Meter DS. Alternative methods of measuring change: What difference does it make? Political Methodology. 1974; 1:125–140.

Whitlock J. The role of adults, public space, and power in adolescent community connectedness. Journal of Community Psychology. 2007; 35:499–518.10.1002/jcop.20161

Zimmer-Gembeck MJ, Helfand M. Ten years of longitudinal research on U.S. adolescent sexual behavior: Developmental correlates of sexual intercourse, and the importance of age, gender and ethnic background. Developmental Review. 2008; 28:153–224.10.1016/j.dr.2007.06.001

Table 1

Demographic characteristics of cohorts reported at baseline

Variable	Early adolescents	Older adolescents
Mean age	11.43	15.81
Percent male	50.7	51.3
Percent African American	93.9	95.6
Percent receiving free or reduced lunch	89.3	83.9
N	909	861

Table 2

Means, standard deviations (SD), and correlations among study variables at baseline

	M	*SD*	1	2	3	4	5	6	7	8
1. Frequency of sex	2.25	2.73		.628[a]	−.078[a]	−.039	−.092[a]	−.345[a]	−.256[a]	−.052[c]
2. No. of partners	2.24	1.71	.532[a]		−.119[a]	−.048	−.105[a]	−.268[a]	−.256[a]	−.016
3. Self-worth	6.22	2.01	−.102[a]	−.123[a]		.027	.208[a]	.047[c]	.233[a]	.144[a]
4. Friend support	5.44	3.95	−.044	−.038	.012		.027	.018	.054[c]	.073[b]
5. Maternal warmth	5.20	1.19	−.095[a]	−.099[a]	.211[a]	.016		.091[a]	.255[a]	.111[a]
6. Curfew	2.42	1.27	−.225[a]	−.160[a]	.049	.028	.084[a]		.205[a]	−.021
7. Parental knowledge	9.55	2.47	−.181[a]	−.184[a]	.229[a]	.067[a]	.256[a]	.154[a]		.097[a]
8. Sense of community	6.78	2.40	−.056	−.025	.158	.065[c]	.110[a]	−.034	.103[a]	

Cells above the diagonal are Pearson correlation coefficients. Cells below the diagonal are partial correlations controlling for age and gender

[a] Significant at $p < .001$

[b] Significant at $.001 < p < .01$

[c] Significant at $.01 < p < .05$

Table 3

Results for intercourse frequency among early and older adolescents

Predictor	Intercourse frequency							
	Early adolescents				Older adolescents			
	β	SE	Error *df*	*t*	β	SE	Error *df*	*t*
Intercept	1.37	0.16	5,109	8.56***	2.66	0.18	5,125	14.70***
Sex frequency	0.35	0.01	6,288	25.79***	0.43	0.01	5,494	38.48***
Age	0.28	0.02	5,341	14.32***	0.23	0.02	5,665	9.21***
Gender	−0.93	0.05	2,648	−20.59***	−0.55	0.06	2,949	−9.53***
Self-worth	−0.06	0.01	5,476	−4.96***	−0.09	0.02	5,479	−1.83***
Maternal warmth	0.04	0.02	6,266	2.01*	0.01	0.02	5,892	0.34
Parental knowledge	−0.03	0.01	6,042	−2.99**	−0.02	0.01	5,943	0.07
Curfew	−0.12	0.02	5,791	−6.63***	−0.11	0.02	6,124	−5.21***
Friend support	−0.01	0.004	6,245	−1.30	0.01	0.01	6,191	1.53
Sense of community	0.01	0.01	5,743	−0.16	0.03	0.01	5,232	2.54**

* $p < .05$,

** $p < .01$,

*** $p < .001$

Table 4

Results for number of sexual partners in the previous year among early and older adolescents

Predictor	Number of sexual partners							
	Early adolescents				Older adolescents			
	β	SE	95 % CI	χ^2	β	SE	95 % CI	χ^2
Intercept	−0.20	0.13	−.47, .07	–	0.63	0.07	.49, .77	–
No. of sexual partners	0.20	0.01	.18, .23	174.64***	0.19	0.01	.17, .20	473.50***
Age	0.24	0.02	.21, .29	155.76***	0.04	0.01	.02, .06	21.48***
Gender	−1.35	0.06	−1.47, −1.23	522.46***	−0.54	0.03	−.60, −.49	390.81***
Self-worth	−0.04	0.01	−.06, −.02	14.85***	−0.03	0.01	−.04, −.02	36.10***
Maternal warmth	0.05	0.02	.01, .08	6.10**	0.005	0.01	−.01, .02	0.30
Parental knowledge	−0.03	0.01	−.05, −.02	15.90***	−0.01	0.003	−.02, −.01	11.59***
Curfew	−0.10	0.02	−.13, −.07	41.75***	−0.04	0.01	−.06, −.03	27.00***
Friend support	−0.01	0.005	−.02, .001	3.23	−0.001	0.003	−.01, .004	0.18
Sense of community	0.02	0.01	.002, .04	4.59*	0.01	0.004	.003, .02	6.49**

* $p < .05$,

** $p < .01$,

*** $p < .001$