

Correlates of Cumulative Sexual Risk Behaviors among African American Youth Living in Public Housing

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Abstract African American youth and especially those who reside in public housing report high rates of sexually transmitted disease (STI) risk behaviors; however, too few studies have examined the correlates of cumulative sexual risk behaviors among this population. This study recruited 298 youth ages 11 to 21 and examined to what degree factors such as age, gender, self-efficacy, substance use, negative peer norms, and delinquency were correlated with cumulative sexual risk behaviors. Major findings indicated that gender, substance use, self-efficacy, and involvement with delinquent peer networks were independent correlates of cumulative sexual risk behaviors, with gender and self-efficacy being the strongest of these factors. Collectively, these findings suggest that gendered approaches to sexual risk reduction among this population are warranted with special content and attention focused on substance abuse risk reduction, improving self-efficacy and managing negative peer influences.

Keywords Sex risk behavior · African American youth · Public housing · Self-efficacy · Deviant peers

Introduction

In the USA, high rates of sexually transmitted diseases (STIs) including human immunodeficiency virus (HIV) are a major public health concern, especially among adolescents. For instance, persons ages 15 to 24 represent approximately 12 % of

the overall population [1] but account for over half of all new STIs such as gonorrhea, syphilis, and HIV infections, respectively [2]. Among youth populations, African Americans bear a disproportionate burden of new STI cases [3]. For instance, among newly reported STI cases, African Americans account for 69 % of all gonorrhea cases and 47.4 % of syphilis cases [2]. Nationwide, rates of gonorrhea, syphilis, and HIV among African American youth are higher relative to White and Latino counterparts [2].

Structural and socio-ecological factors (e.g., higher poverty, lower access to health care, greater community STIs viral loads, risky peer networks, homophily) in part may account for higher STI rates among some populations [4]. In addition, widely acknowledged behavioral risk factors such as early sexual debut (i.e., sex before age 14), a higher number of lifetime sexual partners, using drugs during sex and no condom use, have also been associated with a higher STI incidence [2, 5]. More specifically, among a nationally representative sample, 47.4 % of high school students had initiated sexual intercourse. Among all sexually active youth, almost 7 % had initiated sexual intercourse before the age of 13 years, 15 % reported four or more lifetime sex partners, 22 % had used alcohol or other drugs last sex, and 40 % reported no condom use during last sex [6]. With few exceptions, African American youth report higher sexual risk behaviors relative to their Latino and Asian counterparts. The high STI burden among African American youth warrants more research to better illuminate a broad array of psychosocial factors that might be associated with sexual risk behaviors among this highly vulnerable and under-studied population of youth.

A Socio-Ecological Perspective

Adolescents exist within socio-ecological niches that can influence sexual risk behaviors [7–9]. For instance, factors at the

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individual, behavioral, peer, and macro levels can all coalesce to influence sexual risk behaviors. A socio-ecological perspective posits that individual factors (e.g., age, self-efficacy, substance use) are implicated in promoting or restraining sexual decision making [10, 4]. However, persons exist within social relationships and milieus (e.g., delinquent peer networks) which can also influence sexual behaviors [11, 12]. In addition, residential location might correlate with sexual risk. In addition, the social scripts and norms constructed with gender and race/ethnic roles may also have added influence [13]. Moreover, residential location may intersect with other factors (e.g., race/ethnicity) that might create intersecting risks [14]. For instance, African American youth, compared to White and Latino youth, are overrepresented in urban public housing developments marked by poverty, residential segregation, crime, and community violence [15–17]. Theorists argue that living in impoverished urban neighborhoods, like public housing, may have adverse effects on adolescent health-risk behavior, including sex risk [18].

Recently, scholars have argued the importance of utilizing a socio-ecological framework to better explicate and explain factors associated with sexual risk behaviors among youth [4]. Though a socio-ecological perspective is conceptually and theoretically informative, too few studies have undertaken such an empirical investigation [19] and none focused on youth living in public housing.

A Focus on Youth Living in Public Housing

Theorists assert that residing in socioeconomically deprived areas, like urban public housing developments, may have adverse effects on adolescent health-risk behavior [18, 20]. These areas, specifically urban public housing developments, are situated within an intersection of impoverished conditions, racism, crime, inadequate resources, and limited economic opportunity for its residents to thrive [15, 21, 22]. Research on African American youth living in public housing supports these propositions [23–28]. It is conceivable that risk factors in public housing are linked to co-occurring sexual risk behaviors among African American adolescents.

To date, only a few studies have focused on the sexual risk behaviors of youth living in public housing and among these few studies, some findings have been mixed [29, 25, 26, 30]. Major findings indicated that African American adolescents living in public housing reported an earlier age of onset of sex than African American youth in nationally represented sample (26 versus 16.3 %) [25, 30] and that deviant peers are associated with an earlier age of sexual onset [25]. On the other hand, youth with highly efficacious beliefs delay the initiation of sex and practice safer sex [25, 29, 30].

Although this research has been highly informative, there is a dearth of research on cumulative sexual risk behaviors among African American adolescents living in public

housing. Moreover, few studies have examined multiple correlates of cumulative sexual risk behaviors across a single sample or evaluated how co-occurring problem behaviors (i.e., substance use and delinquency) in addition to social networks (i.e., affiliating with delinquent peers) might be implicated with sex risk behaviors. For the purpose of this paper, cumulative sexual risk behaviors is conceptualized as youth who engage in one or more of the sexual behaviors that contribute to unintended pregnancy and sexually transmitted diseases, including HIV infection (i.e., onset of sex before age 14, four or more lifetime sex partners, drug or alcohol use during sex, and infrequent condom use) [2]. It is important to note that the specific focus of this paper helps to advance the goals of Healthy People 2020 by advancing knowledge in an area and within a population that witnessed no improvement or worsening of outcomes since Healthy People 2010 [31]. In the next section, we briefly review studies that focus on sexual risk behaviors among youth living in public housing and the variables that are the focus of this study.

Socio-ecological Factors Associated with Sexual Risk Behaviors

Gender and Age One of the most consisted findings related to youth sexual risk behaviors is gender; this observation has been reported in both large nationally representative studies [6] and smaller pilot studies on African American youth living in public housing [25]. Specifically, males compared to females report higher rates of sexual risk behaviors that contribute to unintended pregnancy and STIs, including HIV infection [24, 25]. Furthermore, research [6] has also provided evidence that age is a significant correlate of sexual risk behaviors such that older youth report higher rates of unsafe sex relative to their younger peers. Age difference in sex risk has also been reported within sample of African American youth living in public housing, such that older youth engage in more sexual risk behaviors than younger peers [24, 25, 30].

Self-Efficacy. Health promotion activities are pivotal in the prevention of STIs among youth [32]. In congruence, Bandura [33] argues that self-efficacy is a key component of sexual health promotion. Several findings also support this assumption. For example, Nebbitt and colleagues [25] found higher self-efficacy associated with a later age of onset of sexual intercourse in a sample of African American youth living in public housing. Using data from a cross-sectional multi-racial school-based sample of Texas ninth graders, Basen-Engquist and Parcel [34] also found that self-efficacy was associated with adolescents' intention to limit the number of their future sexual partners, number of past-year sexual partners and condom use. Additional cross-sectional findings from a multi-racial sample of 10th graders, documented that students who reported highly efficacious beliefs about condom use were

more likely to report consistent use of condoms in comparison to their less confident counterparts [35], providing evidence that high self-efficacy is inversely associated with some sexual risk behaviors (i.e., age of onset of sex, number of sex partners and condom use). Other findings have also documented that having high assertive self-efficacy skills to demand condom use were also associated with consistent condom use among youth ages 12 to 21 living in public housing [29].

Delinquency Armour and Haynie [36] documented that risk behaviors often cluster within youth populations. For instance, adolescents who initiated earlier sexual intercourse relative to their peers also reported higher levels of delinquency in subsequent years [36]. More specifically, rates of delinquency were 58 % higher than those counterparts who reported never having had sex. Similarly, the Rochester Youth Development Study [37] and the Pittsburgh Youth Study [38] found involvement in delinquent behaviors were associated with early fatherhood when other risk factors remained constant. Others have reported similar findings [39]. However, some findings have been mixed. For example, using a sample of African American youth living in urban public housing, results indicated no relationship between delinquent behavior and early sexual initiation [25].

Substance Use Substance use has also been linked to various types of sexual risk behaviors [26, 40]. Among a sample of incarcerated youth, Castrucci and Martin [41] documented a strong association between regular substance use and multiple sex partners, inconsistent condom use, and trading sex for money. Nebbitt et al. [26] also documented that higher alcohol use was correlated with having sex for money among a community-based sample of African American living in urban public housing. Similar trends have been reported in other studies. Rosengard et al. [42] and Kingree et al. [43] documented that marijuana (i.e., number of marijuana dependency symptoms and consistent marijuana use) was associated with sexual risk behaviors (i.e., sex with a stranger and inconsistent condom use).

Deviant Peers The developmental period of adolescence involves some individualization from parents and the closer identification with peers [44]. Arguably, peers can exert relatively greater influence than parents on some behavioral outcomes when strong positive parental influences are lacking [45, 46]. Numerous studies have documented that youth within similar peer networks report consistent risk behaviors [47, 48]. More specifically, peer networks that endorse unsafe sexual practices report more network members having unsafe sex [45, 49–52]. Research conducted among youth in public housing indicated that negative peer involvement was significantly associated with an earlier age of sexual onset [25].

In summary, few studies have examined multiple correlates of cumulative sexual risk behaviors across a single sample of

African American youth living in public housing. In the few instances where such research has been conducted, the focus has been on single indicators of sexual risk (e.g., age on onset of sexual activity, number of sexual partners, or having sex while doing drugs) [25, 26, 29]. Existing research suggests that sexual risk behaviors often cluster [53], and therefore only examining single STI indices might yield imprecise estimates of sexual risk. For instance, youth who engage in the early onset of sexual activity may do so with a low number of sexual partners while engaging in consistent condom use. Therefore, a lack of attention to the clustering of sexual risk behaviors may yield imprecise sexual risk estimates.

Consequently, the primary aim of this study was to examine the relationship and extent that self-efficacy, substance use, delinquency, and deviant peer network involvement were correlated with cumulative sexual risk behaviors among African American youth living in public housing. Such an inquiry is important because too few studies have focused on African American youth living in public housing and their sexual risks, and this group represents a subpopulation of African American youth with heightened vulnerability. In addition, when correlates of sexual risks are examined, the majority of these studies examine single variables [7] which, though informative, are highly problematic. More specifically, when multiple correlates of sexual risk behaviors are not assessed across a single population, it is difficult to ascertain the relative strength and influence of these factors to overall sexual risk behaviors. Having such nuanced information would enable programming planners and interventionists to focus limited resources on contextual factors that are most significant when several significant influences are present.

Methods

Research Settings and Inclusion Criteria

Between 2006 and 2007, data were collected from African American adolescents living in public housing in two large northeastern cities (sites 1 and 2) and a large midwestern city (site 3). Twenty-three percent of respondents were recruited from site 1, 27 % from site 2, and 50 % from site 3.

Site 1 included one housing development that occupies six square city blocks and comprises 96 six-story buildings. There are 3142 apartments with approximately 3000 families in site 1. African American (60 %) and Latino (33 %) families represent over 90% of the population in this site. Seventy-five percent of the population was under the age of 18 while 60 % was between the ages 10 and 18. In 2006, the median household income was slightly over \$20,000 [54].

Site 2 included two housing developments: a two-story barrack-style development and a 17-story high-rise development. The first development in site 2 consists of 43 buildings

containing 535 units. The second development in site 2 contained two 17-story high-rise buildings that host 499 units. The two developments were home to approximately 2230 residents, 63 % of whom were under the age of 21. Ninety-eight percent of the residents were African American ($N=2185$). The 2007 median household income in the two housing developments was approximately \$7500 [55].

Site 3 included three housing developments: one mixed high-rise and low-rise development and two barrack-style developments. The 2006 median household income in the 3 housing developments was \$6864. Approximately 90 % of the households were female-headed. The three developments housed about 3500 residents. About 47 % of the residents were under the age of 18. Ninety-six percent of the residents were African American. The first development in site 3 included 3 high-rise buildings totaling 242 units and 12 low-rise barrack-style buildings totaling 92 units. The developments occupied 6 city square blocks. The second development in site 3 included 53 low-rise barrack-style buildings hosting 657 units. The development occupied 9 city square blocks. The third development in site 3 included 16 two-story townhouse buildings totaling 148 units built on 5 city square blocks [56].

Youth were eligible to participate if they were (1) between the ages of 11 and 21, (2) demonstrated the capacity to give informed consent, (3) resided in one of the target housing developments, and (4) provided informed assent/consent or were able to provide parental consent where necessary.

Procedures

Recruitment Participants were recruited using flyers and announcements made at local social service agencies, community centers, and in the housing developments where potential participants reside. Once an initial 25 participants (i.e., the index cases) were recruited, respondent-driven sampling (RDS) was utilized to recruit the remaining sample. RDS involved recruiting an initial group of participants, referred to as index cases, then systematically identifying participants that emanated from those index cases. RDS is a form of chain-referral sampling that corrects sampling biases typically associated with chain-referral procedures by controlling the number of referrals each participant can make, thereby producing a sample that is independent of the initial indices [57]. In this study, participants were limited to three referrals. RDS is an excellent method for conducting research in communities that are highly stigmatized, where distrust is prevalent and that have strong privacy concerns, which can lead to low research participation or inaccurate answers to study questions [57].

Data Collection The Department of Recreation and a social service agency provided a private space in order to facilitate data collection at each location. Youth met in groups of 5 to 10

to complete the questionnaire. Two African American graduate students administered the questionnaire: one student read the questions and the possible responses while the other student assisted participants were needed. The questionnaire took approximately 45 min to complete. Youth received \$15 and a snack for their study participation. Howard University Internal Review Board (IRB) approved the research protocol.

Measures

Major Study Variables

Gender was measured by asking participants, “What is your gender?” Responses included “female” and “male.”

Age was measured by one item that asked participants, “How old were you at your last birthday?”

Self-efficacy was measured using the General Perceived Self-Efficacy Scale [58]. This 10-item scale measures a broad and stable sense of personal competence to deal with a variety of life situations. Youth were asked, for example, how true the following statements were: “When I am faced with a problem, I can find several solutions” or “I am confident that I could handle unexpected events.” Responses range from “not true at all = 1” to “true all of the time = 4.” Items are summed with higher scores representing greater perceived self-efficacy. The measure demonstrated acceptable internal consistency with the current sample ($\alpha=0.92$).

Prevalence of substance use in the past year was measured using three items from the drug use section in the Youth Risk Behavior Survey [59]. Questions were limited to alcohol, tobacco, and marijuana use, drugs most commonly reported by youth. A sample question asked “In the last year how often have you used marijuana?” Responses range from, “0 times=1” to “40 or more times=6”. All scores were summed across all three questions to create an index. Scores ranged from 3 to 18.

Delinquent behavior in the past 12 months was measured using the 20-item National Youth Survey Self-Report Delinquency Scale [60]. Sample questions were “[During the past 12 months] did you ever; ‘steal something worth less than \$5?’ or ‘attack someone with the idea of seriously hurting or killing them?’” Responses ranged from “Never=1” to “12 or more times=4.” Items are summed with higher scores representing a higher annual prevalence of delinquent behavior [60]. The measure demonstrated acceptable reliability with this sample ($\alpha=0.93$).

Delinquent peer networks were measured using the 14-item National Youth Survey Exposure to Delinquent Peers Scale [60]. This scale measures the number of a respondent’s close friends that are involved in antisocial behavior. Examples of items include the following: “How many of your close friends: ‘use alcohol’; ‘pressure someone to have sex

with them.” Responses ranged from “none of them=1” to “all of them=5.” Higher scores indicated greater exposure to delinquent peers. The measure demonstrated acceptable internal consistency with this sample ($\alpha=0.92$).

Cumulative sexual risk behavior (CSRB) was measured using four well-established indices from the Centers of Disease Control and Prevention’s Youth Risk Behavior Survey [59]. The cumulative sexual risk behavior variable is a composite score calculated from four sexual risk behaviors variables: (1) age of onset of sexual intercourse (recoded as 13 or younger = 2 and 14 or older = 1); (2) lifetime prevalence of sex partners (recoded as four or more partners = 2 and three or fewer partners = 1); (3) used drugs/alcohol during sex (coded yes = 2 and no = 1); and (4) used condom during sex (coded as yes = 1 and no = 2). The four recoded variables were summed to create the cumulative sexual risk behavior index. Scores ranged from 4 to 7.

Data Analyses

The analytic procedure included four steps. First, univariate analyses were conducted to describe the overall sample. Second, a one-way ANOVA was conducted to compare mean difference between study variable across research sites. Third, bivariate correlations were computed among all major variables in order to explore preliminary bivariate relations. Finally, in order to explore our hypothesis, we conducted a General Linear Model (GLM). The cumulative sexual risk behavior score was regressed on age, gender, self-efficacy, annual prevalence of substance use, delinquent behavior, and delinquent peer networks.

Data Preparation and Diagnostics

Recruitment efforts yielded a total sample of 560 youth. For the purpose of this paper, however, only youth who reported having voluntarily initial sexual intercourse were included in analyses ($n=298$). Prior to conducting the GLM, data were evaluated to ensure that the assumptions of regression were met. Regression diagnostics included tolerance values, variance inflation factors, and a scatter plot of the standardized predictors and standardized residuals. Normality was assessed through visual inspections of histograms and scatter plots. Data diagnostics suggest that multicollinearity did not represent a problem and that the assumptions of linear regression were not violated. Study variables were centered to avoid entering multicollinearity into the model via interaction terms. Casewise (i.e., delete observations three standard deviations above the mean) and listwise deletion were employed. Changes in the original sample size (i.e., $n=298$) due to deleted cases are reflected in each table.

Results

Sample Characteristics

The subsample used in this analysis included 298 African American adolescents. The sample reported a mean age of 16.63 with a standard deviation of 2.16 years. Youth reported a mean cumulative sexual risk behavior score of 5.17 with a standard deviation of 1 year. Females were significantly older than males ($t=2.98$; $p<0.01$). Females also reported higher general self-efficacy compared to males ($t=3.34$; $p<0.01$). In contrast, males reported greater cumulative sexual risk behaviors ($t=-6.44$; $p<0.000$), higher prevalence of delinquent behaviors ($t=-2.47$; $p<0.05$) and greater affiliation with delinquent peer networks ($t=-2.23$; $p<0.05$) than females. There was no evidence that substance use differed by gender (see Table 1).

Pearson’s Correlation

Cumulative sexual risk behaviors were positively related to substance use ($r=.229$; $p<0.001$), delinquent behavior ($r=.296$; $p<0.001$), exposure to delinquent peers ($r=.282$; $p<0.001$), and negatively related to self-efficacy ($r=-.254$; $p<0.001$) (see Table 2).

Multivariate Analysis

The overall multivariate model was significant and explained 28 % of the variance in cumulative sexual risk behaviors [$F(11, 242)=10.08$; $R^2=.283$; $p<0.000$]. When all coefficient estimates were simultaneously assessed, major findings indicated that being male, lower self-efficacy, substance use, and delinquent peer networks were independently correlated with higher cumulative sexual risk behaviors (see Table 3). Age and delinquency were unrelated to cumulative sex-risk behaviors. In post hoc analyses, we examined age as interaction terms (i.e., age by self-efficacy, age by substance use, age by delinquent peer networks, and age by delinquent behaviors). We also split the overall sample into younger (i.e., 11–16 years of age) and older adolescents (i.e., 17–21 years of age). In all instances, the effects of age in these models were insignificant.

Discussion

Healthy People 2020 suggests that new energy and efforts are needed to address areas of no improvement or worsening of outcomes, particularly within under-studied and marginalized populations [31]. Indeed, studies on sex-risk behavior in African American youth living in public housing are severely under-reported in the empirical literature although this population is at a higher risk for a number of poor behavioral

Table 1 Description of the overall sample (N=298)

| Variables | Sample (n=258) | | | Males (n=158) | | Females (n=100) | | t |
|-------------------------------|----------------|-------|-------|---------------|-------|-----------------|------|----------|
| | Range | M | SD | M | SD | M | SD | |
| Age | 11–20 | 16.63 | 2.16 | 16.35 | 2.13 | 17.14 | 2.11 | 2.98** |
| Cumulative sex-risk behaviors | 04–07 | 5.17 | .94 | 5.46 | .88 | 4.71 | .85 | −6.44*** |
| Prevalence of substance use | 03–18 | 6.16 | 3.71 | 6.24 | 3.92 | 6.05 | 3.28 | ns |
| Self-Efficacy | 10–40 | 24.58 | 8.7 | 23.34 | 8.95 | 26.97 | 7.65 | 3.44** |
| Delinquent Behaviors | 14–63 | 23.10 | 9.51 | 24.02 | 10.31 | 21.15 | 7.41 | −2.47* |
| Delinquent Peer Networks | 14–70 | 27.65 | 10.18 | 28.53 | 10.82 | 25.74 | 8.56 | −2.23* |

*p<.05, **p<.01, ***p<.000

outcomes, including sexual risks [25, 26, 30]. This paper represents one step in rectifying this gap in knowledge.

This study examined a broad array of ecological factors and their relationship to cumulative sexual risk factors. Current findings suggest that being male, having low self-efficacy, and higher alcohol, marijuana and tobacco use are associated with co-occurring sex-risk behaviors. This exploration also points to a link between adolescents’ peer networks and their sexual risk behaviors. These findings corroborate those noted in earlier studies [2, 45]. For instance, among a national youth sample, males and especially those who were more likely to be characterized as reporting high-risk sexual behaviors [61]. Other findings based on male juvenile detainees indicated that substance use and sexual risks were correlated [62]. Still, this paper contributes to and expands existing literature by providing evidence that across a single population of African American, youth residing in public housing, especially males, having low self-efficacy, high use of substances, and belonging to delinquent peer networks were all significantly correlated with cumulative sexual risk behaviors. Some researchers have postulated that peer effects (e.g., belonging to delinquent peer networks) may supersede the effects of individual resources (e.g., self-efficacy). Our findings suggest that multiple individual and relational factors matter with regards to cumulative sexual risk behaviors among this population and that such factors should be attenuated when considering primary and secondary sexual risk reduction initiatives.

This study did not provide any evidence that age was related to cumulative sexual risks among this population. A

national probability sample indicated that age and sexual debut were correlated [63]. Prior study findings have provided evidence that being older is correlated with survival sex [25] and lifetime number of sexual partners [6, 30]. For this current sample, age may not be related to cumulative sexual behaviors for several reasons. This study was based on a sample of African American youth living in urban public housing. Adolescents in public housing may be a distinct subgroup when compared to those residing in non-public housing. Therefore, prior studies may not be generalizable to youth residing in public housing, who often reside in highly socially isolated risk networks. Earlier studies also document that African American youth in public housing initiate sex at earlier ages than their non-public housing African American youth counterparts [25, 30]. Accordingly, the protective effects noted with regards to age and cumulative sexual risks may not be observed for this group given such early sexual debuts. It is also possible that the relationship between age and cumulative sexual risk behaviors may be mediated by a variable not assessed in this study. Finally, it would be important for future studies to explore the major variables assessed in this study across African American youth residing both within and outside of public housing to compare between group findings.

Limitations This study has limitations that warrant discussion. All findings are suggestive of associations and in no way are suggestive of temporal ordering or causality given the study’s cross-sectional design. Some relationships may

Table 2 Bivariate correlates (n=298)

| Variables | 1 | 2 | 3 | 4 | 5 | 6 |
|----------------------------------|---|-------|--------|--------|--------|---------|
| 1. Cumulative sex-risk behaviors | | −.009 | .229** | .282** | .296** | −.254** |
| 2. Age | | | .385** | .136** | .080* | .039 |
| 3. Prevalence of substance use | | | | .259** | .285** | .038 |
| 4. Delinquent peer networks | | | | | .519** | −.104** |
| 5. Delinquent behaviors | | | | | | −.128** |
| 6. Self-efficacy | | | | | | |

*p<.05, **p<.01

Table 3 General linear model

| Variables | <i>df</i> | <i>B</i> | <i>SE</i> | <i>F</i> |
|-----------------------------|-----------|----------|-----------|----------|
| Intercept | 1 | .163 | .074 | 11.83** |
| Gender | 1 | −.794 | .136 | 34.10*** |
| Age | 1 | .044 | .034 | ns |
| Prevalence of substance use | 1 | .023 | .020 | 11.21** |
| Generalized self-efficacy | 1 | −.026 | .007 | 6.19* |
| Delinquent behaviors | 1 | .013 | .008 | ns |
| Delinquent peer networks | 1 | .014 | .008 | 7.35** |

$R^2 = .314$, adj. $R^2 = .283$

Criterion—cumulative sex-risk behavior ($n=258$): degree of freedom (*df*), standard beta coefficient estimates (*B*), standard error, statistic (*F*), R^2 , and adj. R^2

* $p < .05$, ** $p < .01$, *** $p < .000$

be directional such that youth who engage in cumulative sexual risk behaviors may be more inclined to use alcohol or join more delinquent risky peer networks and vice versa. Therefore, longitudinal designs would be needed to tease out the temporal relationship among all study variables. Study findings are only limited to African American youth living in urban public housing projects in three large cities. Larger samples with more diverse African American (e.g., Afro-Caribbean) and other youth populations (e.g., Latino) living in public housing would be needed to determine whether these findings can be generalized across all youth populations living in urban public housing. Furthermore, data used in this paper are self-reported and some questions rely on recall which is subject to under- or over-reporting.

Implications

Collectively, these findings suggest that identifying and targeting youth, especially those who are male and report low self-efficacy, use substances, and belonging to negative peer networks for prevention and intervention programs might be efficacious for simultaneously reducing several sex-risk behaviors. Urban public housing developments are situated within an intersection of impoverished conditions, residential segregation, inadequate resources, and limited economic opportunity for its residents to thrive [15, 21, 22]. It is likely that this living situation will have adverse effects on adolescent health-risk behavior [18, 20]. Our findings have direct implications for youth living in public housing. These findings suggest that such initiatives should address strategies for increasing youths' feelings of self-mastery, harm reduction approaches to substance use, and connecting these youth to prosocial groups or peers that support positive behaviors. Naturally, being able to address all the above components in a single prevention or intervention program would be optimum. However, our findings suggest that addressing any of

these multiple correlates would have some relationship to lower rates of sexual risk behaviors among this vulnerable population.

This exploration also showed that males and females reported significantly different rates of self-efficacy, delinquent behavior, peer networks, and substance use. Collectively, these findings suggest that gendered approaches to STI prevention and intervention are warranted. Moreover, study findings also suggest that male and female youth, though living in similar low income settings, may exist within distinct peer networks and social milieu which would need to be taken into consideration when addressing their sexual risk behaviors.

Preventative interventions gleaned from this exploration may not require specialty services. The suggested interventions may be incorporated in existing programs frequently implemented in public housing developments. For example, organized team sports teach youth a sense of control and mastery that may, for some youth, carry over into other aspects of their lives, thereby, increasing their sense of general self-efficacy. Furthermore, programs offered by boys and girls clubs, which are common in many public housing developments, may be expanded to foster and support positive peer cultures. Another possible method to increase youth living in public housing self-efficacy and to help build positive peer networks is to promote youth involvement in tenant organizations. Indeed, promoting healthy sexual development in minority youth living in public housing will require a collective effort involving both specialized services and non-specialty programs.

Compliance with Ethical Standards

Conflict of interest Dr. Von Nebbitt declares that he has no conflict of interest.

Dr. Dexter Voisin declares that he has no conflict of interest.

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Research Involving Human Participants and/or Animals and Informed Consent All procedures followed were in accordance with the ethical standards of human participants in research and with the Helsinki Declaration of 1975, as revised in 2008. The research protocol, including informed consent, parental permission, and youth assent forms, was reviewed and approved by the Institutional Review Board at Howard University.

Informed consent was obtained from all participants over 18 years of age included in the study. Furthermore, youth assent and parental permission were obtained from all participants 17 years of age or younger included in the study.

Data used in this paper were de-identified prior to conducting the analysis and all possible identifying information on participants has been removed. This article does not contain any data that involved animal subjects.

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