



The Longitudinal Association between Perceived Powerlessness and Sexual Risk Behaviors among Urban Youth: Mediating and Moderating Effects

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Abstract

A distal psychosocial factor, perceived powerlessness, has been found to predict various sexual risk behaviors among youth, yet no studies have assessed mediators or moderators in this relationship. Using a demographically diverse, longitudinal sample of urban youth ($N = 257$), this study assessed whether the need for sexual validation mediates the relationship between perceived powerlessness and sexual risk behaviors and to assess whether this mediated pathway is moderated by socioeconomic status and gender. The mean age of the participants was 21 years old (range: 15–24) and the majority of the sample identified as Black (65%) and female (62%). The results of structural equation modeling showed that the need for sexual validation mediated perceived powerlessness and condomless sex at last sex among Black youth. The need for sexual validation mediated perceived powerlessness and concurrent sexual partnerships among White youth and depended on levels of socioeconomic status. Sexual risk behavior interventions should provide youth with increased opportunities that encourage feelings of validation from other personal achievements in addition to sex while simultaneously addressing the structural conditions that drive young people to feel powerless.

Keywords Sexual risk behaviors · Perceived powerlessness · Peer norms · Sexual motivation · Structural equation modeling

Introduction

Adolescence and young adulthood are important developmental periods in which beliefs, values, and expectations are formed, setting the foundation for subsequent health trajectories (Wickrama et al. 2005). Initiation of sex and sexual experimentation is one of many developmental tasks that youth face (Fergus et al. 2007). While developmentally normative to sexually experiment, young people are in the process of mastering their decision-making skills and are less likely than adults to be in longer-term, monogamous partnerships, resulting in elevated rates of sexually transmitted infections among youth compared to adults (Fergus et al. 2007). Data from nationally representative surveys in 2008 showed that nearly 50% of incident sexually transmitted infections occurred among youth aged 15–24 years despite the fact that they represent 25% of the sexually active population (Satterwhite et al. 2013). Among youth in the US, sexually transmitted infections are characterized by substantial socioeconomic, gender, and racial disparities. African American, low income, female youth

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have higher rates of sexually transmitted infections compared to their White, high income, and male counterparts (Harling et al. 2013; Satterwhite et al. 2013; Centers for Disease Control and Prevention 2017). Differences in sexual risk behavior, however, do not entirely explain these disparities (Eitle et al. 2015). Rather than focusing on behavior alone, it may be useful to examine the more distal psychosocial factors that drive risk behavior, as well as how structural factors influence the strength of these psychosocial factors.

Perceived powerlessness is an underexplored psychosocial construct that may drive demographic disparities in sexual risk behavior among youth. Perceived powerlessness is defined as “the belief that one can[not] determine or control one’s own internal states and behavior, influence one’s environment, and/or bring about desired outcomes” (Wallston et al. Spring 1987 p. 5). Although the influence of objective conditions of powerlessness (e.g., poverty) on sexual risk cannot be ignored, scholars have demonstrated that an individual’s *perception* of power is more effective in predicting behavior (Allen et al. 2006; Seligman 1992). Perceived powerlessness is conceptually similar to self-efficacy but defined more broadly; perceived powerlessness refers not only to behavior (i.e., self-efficacy), but also to a more distal and generalized sense of powerlessness over internal feelings and external events or outcomes. Locus of control is another related construct that refers to control over outcomes and reinforcements but not behavior (Wallston et al. Spring 1987).

The relationship between perceived powerlessness and various negative health outcomes is well established. Specifically, feeling powerless has been linked to obesity and chronic diseases (Hemmingsson 2014; Infurna et al. 2017), decreased self-care (Hernandez et al. 2016), lower exercise levels (Tulloch et al. 2017), mental health disorders (Guerra et al. 2017), and substance use (Kearns et al. 2017). While many studies have looked at behavior-specific self-efficacy (e.g., sexual communication efficacy and condom negotiation efficacy) (Black et al. 2011; Tsay et al. 2013), only a limited number of studies have examined generalized perceived powerlessness as a determinant of sexual risk (e.g., condomless sex) among youth (Kagan et al. 2012; Oman et al. 2013). Behavior-specific perceived powerlessness is an important predictor of sexual risk, but there may be greater advantages for examining the generalized construct. First, interventions focusing on the generalized and more distal construct may be more effective in preventing a wider range of sexual risk behaviors. For example, targeting powerlessness in condom negotiation may improve condom use but not a reduction in multiple partners. Second, interventions targeting the generalized construct address the more distal, root causes of sexual risk, thereby potentially increasing both the short- and long-term efficacy of

interventions when compared to addressing behavior-specific perceived powerlessness alone.

Youth with a greater sense of powerlessness may not feel empowered to make decisions around health promoting behavior, including safe sex practices (Pearson 2006), but no studies have examined the mechanisms by which perceived powerlessness influences sexual risk among young people. The current study proposes the need for sexual validation as a potentially mediating variable. The need for sexual validation is defined as the value that individuals place on having sex and sexual relationships as a means to validate their sense of identity. In contrast to constructs embedded in sociocognitive models of rational behavior, the need for sexual validation seeks to capture the underlying *motivation* behind decision making around sex and sexual relationships (Breakwell & Millward, 1997). Sexual motivation is considered one of the sub-domains of sexual self-concept, which is an individual’s view of him or herself as a sexual person (O’Sullivan et al. 2006). Widely used constructs on sexual motivation such as Snell’s sexual motivation sub-scale (Snell et al. 1993), however, only capture personal motivation. Cooper and colleagues (1998) offer a more comprehensive framework on sexual motivation (Cooper et al. 1998) that distinguishes between motivations that are based on self (e.g., the use of sex to affirm one’s sense of identity) vs. social groups (e.g., the use of sex to gain approval from a socially significant group). Accordingly, the current study proposes the use of a more comprehensive, multi-item measure that assesses both personal- and social (peer)-components of sexual motivation. Peer norms are especially relevant for youth who are facing an increased frequency of peer interactions (Brown et al. 1997) and growing reliance on peer feedback in identity formation (Hergovich et al. 2002).

Perceived powerlessness may influence the need for sexual validation through self-esteem, which is correlated to but distinct from a sense of powerlessness and is defined as the affective assessment of one’s self-worth (Lightsey et al. 2008). Perceived powerlessness adversely affects self-esteem by reshaping an individual’s schemata (Ledrich and Gana 2013). Studies, in turn, have linked self-esteem to sexual motivation (Sanchez et al. 2011). Individuals who derive self-worth from romantic relationships have shown to engage in sex to maintain their relationships (Sanchez et al. 2011). It is less about the level of self-esteem, so much as the specific domain of self-esteem (e.g., relationship imperative) that drives sexual motivation.

Understanding how perceived powerlessness and the need for sexual validation vary by social group membership may help with understanding the demographic disparities in sexually transmitted infections. Both constructs exists on a continuum and can also exist among socially privileged individuals (or conversely be absent among the

disadvantaged), but it is the strength of this belief that may vary according to social group membership. Studies have specifically suggested that Black, female, and socioeconomically deprived individuals generally experience greater levels of perceived powerlessness compared to their counterparts (Paradies and Cunningham 2012; Ross 2011). Discrimination and systematic restrictions in access to resources and power often result in a profound sense that life outcomes are not responsive to their efforts and choices (Pearlin et al. 1981). Differences in the need for sexual validation by gender show a different pattern. Studies have suggested that boys and men exhibit a greater need for sexual validation, which is in part driven by societal gender norms that encourage boys and men to do so (Thompson and Pleck 1986). No studies have examined the need for sexual validation by race or socioeconomic status.

Current Study

The primary aim of this current study is to determine whether the relationship between perceived powerlessness and sexual risk behaviors is mediated by need for sexual validation among a demographically diverse, longitudinal sample of youth in Baltimore, MD. Self-esteem may link perceived powerlessness to the need for sexual validation, but was not measured as part of the parent study; its contribution to this pathway is outside of the scope of this study. Understanding the intermediary mechanism by which a distal factor like perceived powerlessness influences sexual risk can illuminate additional access points for intervention, allowing for the development of more targeted interventions to prevent sexually transmitted infections. The authors of this study hypothesized that youth who feel powerless may place a higher value on having sex and sexual relationships in order to gain a sense of self- and peer-based validation, which may ultimately lead to increased sexual risk taking.

The second objective of this study is to explore how social group membership (i.e., race, socioeconomic status, and gender) moderates this mediated pathway (i.e., perceived powerlessness to need for sexual validation to sexual risk behaviors). There is some evidence showing the moderating influence of social group membership of perceived powerlessness and the need for sexual validation separately, but it is unclear how these identities influence this pathway. No a-priori hypotheses was set for this exploratory objective. Further, this objective explores how the intersection of multiple identifies (e.g., being Black and female) influence the strength of this pathway. This aim is guided by the theory of intersectionality, which delineates that individuals who belong to more than one marginalized social group are faced with multiple forms of oppression and that the

consequence of this oppression is multiplicative (Crenshaw 1989). Intersectionality provides a useful framework for critically examining the structural context of both identity development as well as sexual risk taking among youth (Shade et al. 2011).

Methods

Participants and Procedures

Data were drawn from a longitudinal study of youth, aged 15–24 years old. Data were collected from February 2011 through May 2013 and yielded a baseline sample of 350 participants and a six-month follow-up sample of 257. Participants were eligible if they were Black or White, English speaking, sexually active persons between the ages of 15 and 24 who resided in Baltimore City (Jennings et al. 2010). The study employed a stratified sampling design in which sampling strata were census block groups (CBGs) to allow for oversampling in areas with high concentrations of the eligible population. Additional details of the study design are published elsewhere (Lilleston et al. 2015). The primary sample was selected from a sampling frame of the 254,458 locatable residential mailing addresses in Baltimore City. After the sample was allocated to eligible CBGs, the study team selected a probability-based sample of residential mailing addresses within each CBG.

All sampled households received a lead letter describing the study and then subsequently by telephone for those households with available phone numbers (33%) or, if not, in-person by trained research assistants. Of the 12,000 households that were sent letters, 10,509 were successfully contacted. Screening was conducted among households with eligible individuals. In selected households with more than one eligible person, individuals were randomly selected for screening, and multiple participants per household were allowed. Of the households contacted, 281 had individuals meeting the study eligibility criteria, and 237 households agreed to participate (84%). Parental informed consent and adolescent informed consent were conducted with individuals younger than 18 years of age and informed consent was conducted for individuals 18 years or older.

Consenting individuals were enrolled, and research assistants administered an audio computer-assisted self-interview (A-CASI) in a private setting immediately after informed consent/assent. The A-CASI survey captured information on demographics, alcohol and drug use, and sexual histories including individual- and partner-related sexual risk behaviors. For each sex partner named in the last 120 days, participants were asked to report on the same questions about their sex partners' behavior. Follow-up visits were scheduled six months after completion of the

baseline survey via letters, phone calls, and in-person visits. Participants who had moved outside of Baltimore completed the interview on the phone by an interviewer. Out of the 350 baseline participants, 257 were successfully reached (73.4% follow-up rate). In the follow-up survey, the following domains were deleted from the baseline survey: sociodemographic questions; some neighborhood criminal activity questions; and age at first sex. The study was approved by the Institutional Review Board of the Johns Hopkins Bloomberg School of Public Health.

Measures

Perceived powerlessness (powerlessness, hereafter)

The 9-item scale was developed by the study team to reflect an urban context such as Baltimore, characterized by lack of educational and economic opportunities as well as high levels of poverty and violence (Sibinga et al. 2016; Centers for Disease Control and Prevention 2013; Polk et al. 2011). Some of the scale items were adapted from pre-existing generalized powerlessness scales (Pearlin et al. 1981; Shaw and Krause 2001). Additional items were developed to measure powerlessness related to structural factors that would be salient to the study population: school or job, political participation (i.e., voting), and finances. Previous psychometric testing demonstrated that the scale was valid and reliable (Lim et al. 2018). Cronbach's alpha (α) for the nine-item scale was 0.83. Results from exploratory factory analysis (EFA) exhibited a three factor solution on the first order (i.e., future ($\alpha_{\text{present}} = 0.77$), present ($\alpha_{\text{future}} = 0.77$), and money ($\alpha_{\text{financial}} = 0.66$)) and a one factor solution on the second order (i.e., powerlessness); the same factor structure was specified for the measurement model in the current analysis. Results the confirmatory factory analysis (CFA) indicated good fit according to model fit indices. Additionally, results of measurement invariance testing via multi-group CFA indicated that the scale was invariant by gender and socioeconomic status (SES), but not race. The scale had responses rating on a 4-point Likert scale (1 = strongly agree; 2 = somewhat agree; 3 = somewhat disagree; 4 = strongly disagree). All items were reverse coded so that higher scores indicated greater levels of powerlessness. Table 1 shows the item wording for the scale.

Need for sexual validation

The 11-item scale measures the imperative or need for sexual validation and combines personal and peer-based motivation for sex and sexual relationships. Items were adapted from the sexual motivation sub-scale of Snell's Multidimensional Sexuality Questionnaire (MSQ) to generate seven items on the personal need for sexual validation

(Snell et al. 1993). Using van de Bongardt and colleagues' theoretical framework on peer norms, the study team developed four items on peer pressure and injunctive norms (i.e., peer attitudes) around sex and sexual relationships (van de Bongardt et al. 2015). The bottom of Table 1 displays the item wording for the need for sexual validation scale. The scale had the same 4-point Likert scale responses as the powerlessness scale and items were reverse coded so that higher scores indicated greater need for sexual validation.

Sexual risk behaviors

The study looked two recent (past six months) sexual risk behaviors: condomless sex at last sex (yes vs. no condom use during vaginal or anal sex), and concurrent sexual partnerships (yes vs. no; concurrency, hereafter). Concurrency was defined as self-report of having one or more sexual partnership(s) that overlapped in time with the reported sexual relationship. Participants were asked, "Did you have sex (meaning only anal or vaginal sex) with anyone else while you were seeing [current main partner]?"

Covariates and moderators

Informed by the sexually transmitted infections (STI) disparities literature, the study examined the following demographic characteristics of participants: age (continuous), gender (male vs. female), and SES (low vs. high). Gender and SES were also specified as moderating variables. Studies have shown poor validity of common SES measures like adolescent report of parental income or parental occupation (Svedberg et al. 2016). The study gathered data on parental occupation, but a significant amount of data was missing; instead, we employed a subjective construct (i.e., perceived SES). Perceived SES (SES, hereafter) was measured using an image of a ladder with ten rungs (values ranging from 1–10 with 1 indicating higher SES) (Demakakos et al. 2008). Participants were asked to place themselves based on where they think they stand in society in terms of money, education, or jobs. The scores were then dichotomized (low SES (≥ 6) vs. high SES (< 6)). Parental education was dichotomized as high school or less vs. more than high school.

Analysis

The study had moderate rates of retention (73.4%); a post-hoc analysis comparing analysis variables and other demographic characteristics, psychosocial variables and sexual risk behaviors (all variables listed in Table 2) indicated no statistically significant differences between those who were lost to follow-up versus those who remained in the study. To develop the measurement model for the need for sexual validation scale, a principal components analysis

Table 1 Item wording in perceived powerlessness (pp) and need for sexual validation scales

Perceived Powerlessness Scale
<i>Factor 1: Present perceived powerlessness</i>
pp1. Sometimes I feel that I am being pushed around in life
pp2. When I have a problem, I do not feel confident I can solve it
pp8. At school or work, I do not always speak up when I have something to say because I do not think anyone will listen to me
<i>Factor 2: Future perceived powerlessness</i>
pp7. I do not think that my education has prepared me to achieve a successful career
pp9. I do not think much about voting in the future because politicians are not interesting in helping to improve the situation of people like me
pp10. There is no point in trying to change things for the better because no one cares or wants to help
pp11. Working hard in school or on the job does not guarantee better opportunities later on
<i>Factor 3: Financial perceived powerlessness</i>
pp4. I worry about money because jobs for me or my family members are not easy to find or keep
pp6. Saving money is hard to do in my household because we already have a hard time paying the bills
Need for Sexual Validation Scale
nsv1. My friends respect me more when I am in a sexual relationship
nsv2. I feel better about myself when I am in a sexual relationship
nsv3. My friends encourage me to have sexual relationships
nsv4. My friends think something is wrong with me if I am not having sex regularly
nsv5. The more people I am having sex with, the better I feel about myself
nsv6. Having sex early in the relationship is a good way to keep the other person around
nsv7. My friends encourage me to find a sexual partner when we go to a club or bar
nsv8. I do not think positively about myself when I am not having sex regularly
nsv9. I sometimes feel envious of other people in sexual relationships when I am not in one
nsv10. I am a more complete person when I am in a sexual relationship
nsv11. Having a boyfriend or girlfriend makes me feel more valuable

(PCA) was conducted on a polychoric correlation matrix, and subsequently exploratory factor analysis (EFA) on the baseline data, using a promax rotation and a maximum likelihood estimator (Kaiser 1974). EFA is a statistical method of letting the data tell the analyst the structure of the scale, rather than testing an a-priori hypothesis. The number of factors were determined via the following criteria: Eigen values greater than 1.0 (Chubb et al. 1997), percent variance explained, scree plot (Pieterse and Carter 2010), and parallel analysis. Items were considered for dropping if they had high levels of uniqueness (>0.50), if they did not load highly on one factor (>0.40) (Goodman et al. 2007; Lien et al. 2001), and by examining the substantive content of the items. PCA and EFA were performed using STATA Version 13 (StataCorp 2013). Results of the EFA on baseline data ($n = 350$) showed a one factor solution with all items loading highly and with low uniqueness values.

Next, a confirmatory factor analysis (CFA) was conducted on the follow-up data, using a weighted least squares mean and variance (WLSMV) estimator (Muthen and Muthen 1998–2005). CFA is a way to test the pre-determined, hypothesized structure of the scale that was found in

EFA. Adequacy of model fit was assessed using the root-mean-square error of approximation (RMSEA), with values of < 0.06 as indicating good fit (Hu and Bentler 1999). In addition, the Tucker-Lewis Index (TLI) and Comparative Fit Index (CFI) values of > 0.95 were used to denote good fit (Hu and Bentler 1999). Reliability was assessed via Cronbach's alpha. CFA was performed using MPlus Version 7 (Muthen and Muthen 1998–2005). Results of the CFA on the follow-up data ($n = 253$) showed that the one factor model was a moderate fit to the data: degrees of freedom (df) = 44, Chi-square (χ^2) = 169.317, root-mean-square error of approximation (RMSEA) = 0.106, comparative fit index (CFI) = 0.972, and Tucker-Lewis index (TLI) = 0.964.

In order to assess measurement invariance of the need for sexual validation by gender, race, and SES, multiple-group CFA was performed using baseline data. For example, multi-group CFA tests for whether the scale's structure depends on whether an individual is Black versus White. First, an unconstrained model was estimated, in which all the loadings and thresholds were allowed to vary. Next, a constrained model was fit, wherein the loadings and

Table 2 Baseline participant characteristics and recent^a sexual risk behaviors at follow-up by race ($N = 350$)

	Total $n = 350$ (%)	White male youth $n = 52$ (%)	White female youth $n = 70$ (%)	Black male youth $n = 80$ (%)	Black female youth $n = 148$ (%)
Age (mean, SD) ($n = 349$)	21 (2.6)	21 (2.5)	23 (2.5)	20 (2.5)	21 (2.6)
SES (parental education) ($n = 346$)					
High school diploma or less	143 (41.3)	17 (33.3)	27 (38.6)	29 (36.3)	70 (48.3)
Some college or more	203 (58.7)	34 (66.7)	43 (61.4)	51 (63.8)	75 (51.7)
Perceived SES ($n = 345$)					
Low (score of ≥ 6)	204 (59.1)	32 (61.5)	37 (53.6)	52 (65.0)	83 (57.6)
High (< 6)	141 (40.9)	20 (38.5)	32 (36.4)	28 (35.0)	61 (42.4)
Perceived powerlessness (mean, SD) ^a	18.1 (6.1)	19.0 (6.0)	18.9 (6.2)	18.4 (6.5)	16.2 (5.7)
Need for sexual validation (mean, SD) ^b	17.8 (7.2)	23.1 (7.7)	17.3 (4.9)	20.8 (8.5)	14.5 (5.0)
Concurrency ^c	38 (15.0)	3 (8.1)	4 (8.5)	15 (28.3)	16 (13.7)
Condomless sex at last vaginal/anal sex ^c	129 (50.8)	22 (59.5)	30 (63.8)	22 (41.5)	55 (47.0)

^aLower scores indicate greater perceived powerlessness

^bHigher scores indicate greater need for validation

^cPast 6 months; assessed at follow-up ($N = 257$)

thresholds were set to be equal across groups. A robust chi-square model difference test using the MPlus DIFFTEST function was then performed. Due to non-invariance by race in both measurement models, the study sample was a-priori stratified by race for the structural equation modeling (SEM). Measurement invariance testing showed invariance across gender and SES, but not race. For Black youth, model fit statistics were as follows: $df = 44$, $\chi^2 = 191.603$, RMSEA = 0.122, CFI = 0.953, and TLI = 0.941; for White youth, model fit was as follows: $df = 44$, $\chi^2 = 107.042$, RMSEA = 0.109, CFI = 0.968, and TLI = 0.941. Cronbach's alpha for the scale was 0.90.

Mediation was tested by examining the significance of the indirect effects of the SEM using 10,000 bootstraps. Based on the literature, theoretically relevant variables were controlled for, including age, gender, and SES. Results of normality testing (results not shown) indicated that the latent variable and their indicators were not multivariate normal. A total of four mediation models were constructed (two sexual risk behavior outcomes for each race). Adequacy of model fit was assessed using the same fit statistics as those used for the CFA. SEM was performed using Mplus Version 7 (Muthen and Muthen 1998–2005).

To examine whether the strength of the pathway from powerlessness to the need for sexual validation to sexual risk behaviors varies based on social group membership (i.e., moderated mediation), multi-group SEM was performed. First, an unconstrained model was fit in which path coefficients were allowed to vary across groups and then fit a constrained model in which path coefficients were forced to be equal. A significant multi-group χ^2 value signified that the path coefficients were in fact different across groups, meaning that evidence to support moderation may exist.

Moderation was only assessed for models in which there was evidence of statistically significant mediation. For the moderated mediation analysis, the perceived SES construct was used; parental education was used in sensitivity analyses to compare results with the perceived SES models. For the SES-moderated mediation models, only age and gender were specified as control variables, since SES could not be specified as a control variable within the multi-group SEM framework. Similarly, for the gender-moderated mediation models, only age and SES were specified as control variables and excluded gender.

Results

The mean age of the total sample ($N = 350$) at baseline was 21 years old, and a majority of the sample identified as Black (65%), female (62%), and low SES (59%) (Table 2). Mean score for powerlessness was 18.1, with Black male and Black female youth indicating slightly greater levels of powerlessness compared to their White counterparts. The mean need for sexual validation score was 17.8, with White and Black male youth showing greater levels of need for sexual validation compared to female youth, and with White male and female youth showing greater levels compared to their Black male and female counterparts, respectively. Fifteen percent of the sample indicated having been in a concurrent sexual relationship, with Black male and female youth reporting more concurrent relationships than their White counterparts. Just over half of the sample reported condomless sex at last sex (51%), with White male and female youth reporting higher rates compared to Black male and female youth.

Among White youth, statistically significant mediation of the need for sexual validation only occurred with the outcome concurrency as shown by the significant indirect effect ($\beta = 0.196$; $p = 0.009$). Higher levels of powerlessness indirectly predicted greater propensity of concurrency through greater levels of the need for sexual validation, adjusting for age, SES, and gender. Female youth showed decreased propensity for the need for sexual validation, holding all other variables constant ($p < 0.001$). Model fit for the mediated model for concurrency among White youth was moderately good (RMSEA = 0.069, CFI = 0.934, TLI = 0.925). Figure 1 shows the parameter estimates between all observed and latent variables for this outcome among White youth.

Among Black youth, mediation only occurred with the outcome condomless sex at last sex (indirect effect, $\beta = 0.170$; $p = 0.009$). Higher levels of powerlessness indirectly predicted greater propensity of condomless sex through greater levels of need for sexual validation, adjusting for age, SES, and gender. Older individuals were at greater propensity of reporting condomless sex ($p < 0.010$), and female youth showed decreased propensity for the need for sexual validation, controlling for all other variables ($p < 0.001$). Model fit statistics for the mediated model indicated moderate to good fit (RMSEA = 0.057, CFI = 0.950, TLI = 0.943). Figure 2 shows the parameter estimates between all observed and latent variables for this outcome among Black youth.

There was no evidence of moderated mediation by gender for either Black or White youth for any of the sexual

risk behaviors. There was evidence of moderated mediation by SES for the concurrency model among White youth only (χ^2 difference test $p = 0.022$). The indirect effect from powerlessness to the need for sexual validation to concurrency among low SES White youth was marginally significant ($\beta = 0.186$; $p = 0.061$). The direction of the indirect effect from powerlessness to the need for sexual validation to concurrency among high SES White youth was reversed but was not significant ($\beta = -0.146$; $p = 0.211$). Results of sensitivity analyses using parental education as a proxy for SES were similar; there was no evidence of moderated mediation by parental education for either Black or White youth.

Discussion

Powerlessness is a distal and generalized psychosocial measure that has been linked to sexual risk behaviors, yet no mediating or moderating effects have been previously explored. Demographic disparities in STIs cannot fully be explained through differences in sexual risk behavior and knowledge of intermediary mechanisms can help with understanding of additional upstream factors that drive sexual risk behavior. The current study examined whether the need for sexual validation mediates the relationship between powerlessness and sexual risk behaviors among a demographically diverse, longitudinal sample of urban youth. Findings revealed that both powerlessness and the need for sexual validation influence sexual risk taking.

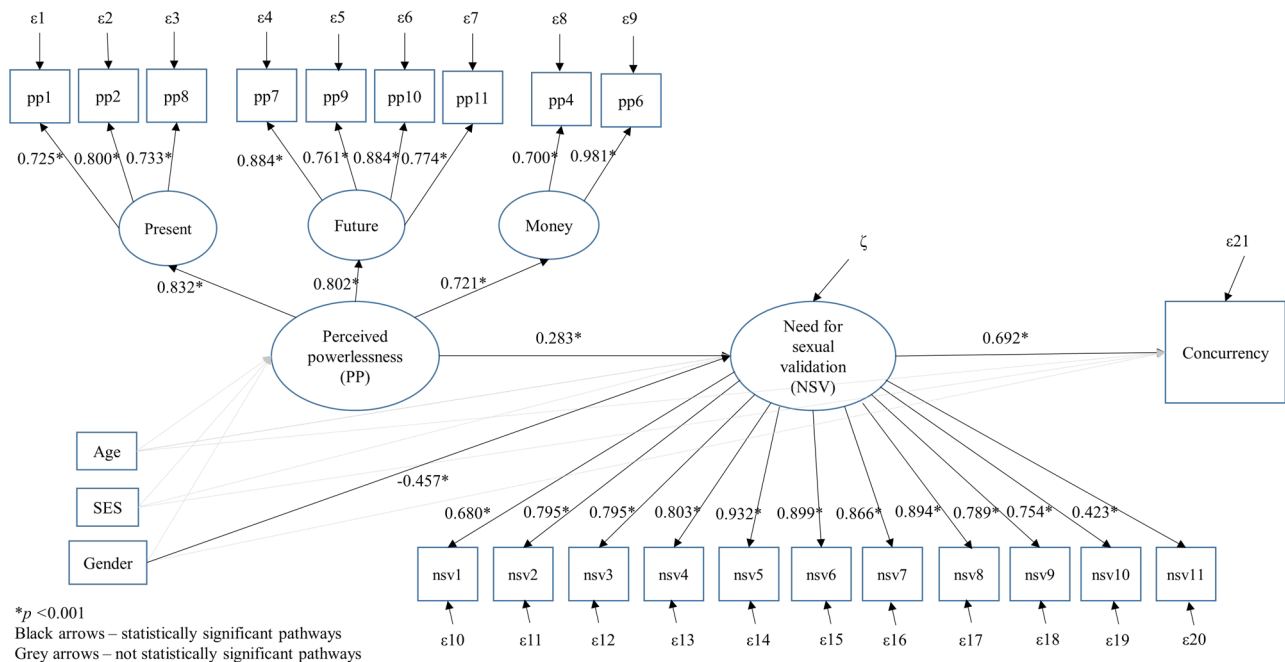


Fig. 1 Standardized parameter estimates with outcome, concurrency, among White youth (N = 122), adjusted for age, gender, and SES

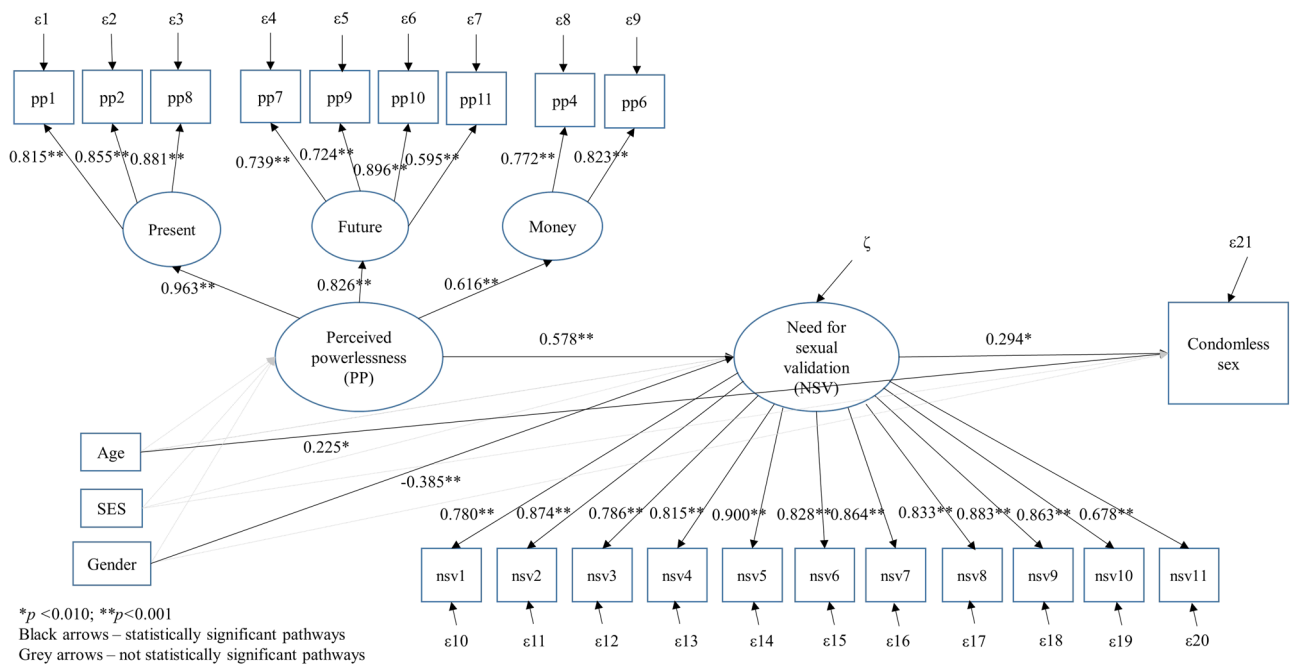


Fig. 2 Standardized parameter estimates with outcome, condomless sex, among Black youth ($N = 227$), adjusted for age, gender, and SES

Specifically, the need for sexual validation mediated powerlessness and condomless sex at last sex among Black youth and concurrent sexual partnerships (concurrency) for White youth. These results suggest that the need for sexual validation is at least one important mechanism by which powerlessness determines certain sexual risk behaviors, adding to the evidence base from which to develop STI interventions for youth.

Mean powerlessness scores were similar among Black youth compared to their White counterparts, indicating that White youth’s perception of powerlessness may be increasingly similar to that of Black youth in contrast to findings of older studies. A 2011 national study on reverse racism found that White individuals believed that anti-White racism has become more serious over time in comparison to anti-Black racism, which may be one potential contributor to increased sense of powerlessness among White youth (Norton and Sommers 2011). In line with existing scholarship, the need for sexual validation scores showed distinct gender patterns with male youth regardless of race, indicating greater levels of the need for sexual validation than female youth (Thompson and Pleck 1986). The racial patterns in prevalence of condomless sex and concurrency were also similar to those found in other studies (Reece et al. 2010; Adimora et al. 2007), with White youth reporting more condomless sex and less concurrent relationships compared to Black youth, lending support to the field’s current understanding that individual-level sexual risk behaviors do not entirely explain racial disparities in STI rates.

White youth with high powerlessness and high the need for sexual validation were more likely to report concurrent relationships compared to White youth with low powerlessness and low the need for sexual validation. Examining overall patterns in prevalence of a behavior can often mask important trends among sub-groups, such as White youth who perceive they have little power. Results highlight the importance of looking at the nuances occurring within sub-groups, given the heterogeneity in powerlessness and the need for sexual validation observed within racial groups (Khan et al. 2012). Additionally, results showed that Black youth with high powerlessness and high need for sexual validation were more likely to report condomless sex at last sex. STI prevention efforts may be more resource-effective if they identify and target sub-groups of Black youth with high powerlessness rather than treating Black youth as a homogenous population (Tsui et al. 2008).

Results also indicated that the mediated relationship between powerlessness and sexual risk behavior may depend on levels of SES among White youth. More precisely, the mediated pathway from powerlessness to the need for sexual validation to concurrency was marginally significant for low SES White youth and not significant for high SES White youth. The current study and others have noted the difficulty in accessing low SES White individuals, which may contribute to this sub-group being an understudied population for sexual risk behaviors and STIs (Geddie et al. 1998). However, results indicated that while race may privilege White youth, low SES can still adversely affect their sexual risk.

The relationship between powerlessness and condomless sex at last sex did not depend on levels of SES among Black youth. This result could point to fact that the effects of structural and psychosocial factors on sexual health derive primarily from race and not class. In other words, feeling powerlessness and having a greater need for sexual validation may be driven less by SES than by racial group membership. Intersectionality scholars posited that not only is the effect of multiple marginalized identities multiplicative, but that there exists a *hierarchy* of identities in which some are more prominent than others (Stryker and Statham 1985). That is, identities are organized in order of salience with more salient identities having a higher likelihood of being invoked across situations and ultimately with higher probabilities of influencing behavior. Future research could help clarify which social identities are more salient in sexual motivation and decision-making among those with multiple marginalized identities through statistical methods such as hierarchical classes analysis (Stirratt et al. 2008). Identifying the most salient identity may inform the development of more targeted interventions.

There was no evidence for moderating effects of gender, and this null result is in line with previous research that also failed to find support for gender moderation in the relationship between powerlessness and sexual risk (Pearson 2006). Because research has shown that young men have higher levels of the need for sexual validation than young women, and conversely, young women have higher levels of powerlessness than men, the combination of the two factors with opposing effect sizes likely resulted in this null effect. It is possible that powerless young women and men are increasingly less different in the ways that they arrive at sexual risk, contrary to the common assumption that women are more vulnerable. It is also possible that because powerlessness measures perceptions rather than objective lack of power, that the gendered origins of those perceptions may not be captured. Similarly, because the need for sexual validation measures sexual motivation and not the ultimate goal of that motivation that may differ by gender (e.g., emotional intimacy for young women versus sexual satisfaction for young men), the gendered nature of this pathway may not be captured.

The study's findings suggest that interventions should address the structural conditions that drive feelings of powerlessness and the need for sexual validation. Examples of structural interventions include those aiming to reduce neighborhood-level poverty, increase access to stable housing, and reduce incarceration rates, among others (Adimora and Auerbach 2010). STI interventions should broaden their scope to assist youth in finding alternate sources of validation in addition to sex and sexual relationships without diminishing the importance of healthy sexual development. For example, promoting individual and community assets through a Positive Youth

Development approach by offering young people with academic, economic, and volunteer opportunities has been shown to increase one's self-confidence and self-worth (Romero et al. 2011). Such interventions would not only reduce the need for sexual validation, but also levels of powerlessness, resulting in empowering processes that mutually reinforce one another.

The need for sexual validation could also be reduced by directly targeting the peer norms that promote increased sexual risk behavior (e.g., peer educators) (Pedlow and Carey 2004) or by increasing a sense of one's self-worth (Erikson 1968). Evidence-based clinical treatments such as cognitive behavioral therapy or motivational interviewing that address underlying motivation for behavior may be effective in altering the type and level of sexual motivation that drives risk taking (American Psychological Association; Forman and Moyers 2019). In recognizing that some youth may be multiply disadvantaged, it will be important to address the intersecting structural conditions in tandem. A singular focus on addressing poverty, for example, may not be adequate, but comprehensively targeting racial discrimination, poverty, and gender-related vulnerabilities at multiple-levels (e.g., structural, neighborhood, individual) could be a promising strategy to reduce demographic disparities in STIs.

This study was characterized by several limitations. Moderation by race could not be assessed (and comparisons across race could not be made) due to results of earlier measurement invariance testing on powerlessness and the need for sexual validation scales. Small cell sizes may have limited the ability to see significance in sub-group analyses (i.e., moderated mediation). Related, while it is acknowledged that adolescents (age 19 and younger) may be at a different development stage compared to their older counterparts, the study did not explore age-related differences. Future studies could benefit from larger sample sizes that allow for comparisons across a greater number of groups (e.g., intersection of age, race, class, and gender together). Analyses employed a subjective measure of SES, while an objective measure such as family income, or at least a validated measure of subjective SES, would have greatly enhanced this study's analyses. Lastly, the parent study did not measure self-esteem, which may be the intermediary factor linking powerlessness and the need for sexual validation, meriting exploration of the role of self-esteem in future studies.

Conclusion

Few studies have linked generalized powerlessness to sexual risk behaviors, and even fewer have explored the intermediary mechanisms or factors that moderate the

strength of this relationship. Our study demonstrated that a psychosocial variable that captures sexual motivation mediates the relationship between powerlessness and sexual risk. Informed by an intersectionality framework, the study results also provided an important first step in exploring how the combination of multiple social identities differentially impact sexual risk. Sociodemographic disparities in STIs have been persistent, and differences in sexual risk behavior have not adequately accounted for such disparities. The results of this study offer additional support for addressing the structural conditions that drive feelings of powerlessness as well as targeting the underlying motivation for engaging in sexual risk behaviors due to the imperative to gain self-validation.

Authors' Contributions SL performed the statistical analysis and wrote the manuscript; TWP and QX participated in the interpretation of data and helped to draft the manuscript; VL participated in the design and interpretation of data; RBT participated in the design and interpretation of data; JME and SGS conceived of the study, participated in its design and coordination. All authors read and approved the final manuscript.

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Data Sharing and Declaration The datasets generated and/or analyzed during the current study are not publicly available but are available from the corresponding author on reasonable request.

Compliance with Ethical Standards

Conflict of Interest The authors declare that they have no conflict of interest.

Ethical Approval All procedures performed in studies involving human participants were in accordance with the ethical standards of the Institutional Review Board of Johns Hopkins Bloomberg School of Public Health and with the 1964 Helsinki declaration and its later amendments or comparable ethical standards.

Informed Consent Informed consent was obtained from all individual participants over 18 years old included in the study. For individuals younger than 18 years old, parent informed consent and adolescent informed assent was obtained.

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