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Attitudes towards Power in Relationships and Sexual Concurrency within Heterosexual Youth Partnerships in Baltimore, MD

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Abstract

Sexual concurrency may increase risk for HIV/STIs among youth. Attitudes about gender roles, including power balances within sexual partnerships, could be a driver. We examined this association among Baltimore youth (N=352), aged 15–24. Data were collected from February, 2011 to May, 2013. We examined whether index concurrency in male-reported partnerships (N=221) and sex partner concurrency in female-reported partnerships (N=241) were associated with youth's attitudes towards relationship power. Males with more equitable beliefs about power were less likely to report index concurrency. Females with more equitable beliefs were more likely to report partner's concurrency. The relationship was significant in main and casual partnerships among females and main partnerships among males. The strongest associations were detected among middle-SES males and low-SES and African American females. Implementing interventions that recognize the complex relationship between socioeconomic context, partner dynamics, gender, and sexual behavior is an important step towards reducing HIV/STI risk among youth.

Keywords

Concurrency; HIV; Sexually Transmitted Infections; Youth; Adolescents

Introduction

Evidence suggests that higher prevalence of concurrent sexual relationships in a sexual network, defined as two or more sexual partnerships that overlap in time, may increase the

rate of spread of HIV and other sexually transmitted infections (STIs) and that sex partner concurrency may elevate an individual network member's own risk of acquiring an STI, even after controlling for number of sex partners (1–5). Mathematical modeling of HIV/STI epidemics consistently predicts higher rates of infection in populations where concurrent sexual partnerships are common (3, 6, 7) suggesting that differential rates of concurrency might help to explain persistent racial disparities in HIV/STI rates (7).

Beliefs about gender roles have been associated with sexual risk behaviors in heterosexual American youth (8–13) and may be an important motivator of concurrency. Beliefs about gender roles are the socially constructed norms and expectations associated with being a male or a female. For example, virility and toughness among males (14–16) and emotional strength, commitment, and care-taking among females (15, 17) have been identified as gender roles which may facilitate males' concurrency in heterosexual partnerships. In addition, relationship-oriented gender role beliefs, such as positive attitudes regarding male dominance in decision-making and sexual activity, have been linked to concurrency and a greater number of sex partners among males (16, 18, 19).

Studies suggest that the relationship between gender-related beliefs and sexual behavior is context specific and may vary by factors such as race/ethnicity, SES, and partnership type (18–23). The majority of the literature examining the relationship between gender-related beliefs and sexual risk behavior is based among low-income African Americans (15, 23–25) and highlights the distinct ways in which race/ethnicity and SES inform STI risk behavior. Low SES and African American race/ethnicity have been connected to more traditional gender role beliefs that are, in turn, linked to increased sexual risk behavior. The ethnographic research of Tony Whitehead (1997), for example, describes how limited economic opportunity for low-income urban African American males has driven a redefinition of masculinity in the form of sexual risk behavior (e.g. concurrency and inconsistent condom use) and drug trafficking (23). In Nunn et al.'s (18, 19) work with low-income urban African American females, concurrency was identified as a practical means for women to gain material support from male partners in times of economic vulnerability.

The relationship between gender role beliefs and concurrency may also vary by sexual partnership type (i.e. main vs. casual sexual partnerships). In research among youth, the expression "main partnership" has generally been used to represent a cluster of relationship characteristics including trust, emotional intimacy, and commitment. Casual partnerships, on the other hand, are understood in juxtaposition to main partnerships and represent a mixture of relationship types distinguished by their lack of these characteristics (20, 21). Studies suggest that casual and main partnerships are characterized by differing partner dynamics (20–22, 26) and that a higher level of commitment and intimacy, as is often found in main partnerships, may be necessary for associations between gender role beliefs and sexual behaviors like concurrency to fully develop, such that strong associations between gender role beliefs and sexual risk behavior are likely to appear in main but not casual partnerships.

Despite the potentially important role of gender role beliefs in influencing male sexual concurrency, only one known study has quantitatively tested this association. In a clinic-based sample of African American female youth, participants who adhered to traditional

beliefs regarding femininity were significantly more likely (OR=2.8; 95% CI: 1.01–4.3) to report that their male sex partners had concurrent female sex partners (8). No study, to our knowledge, has assessed this association among males or examined how this relationship may differ by the potentially important modifiers of race/ethnicity, SES, and partnership type.

The “Gender Norms and Partner Selection: HIV/STI Risk Among Urban Youth” study provides a unique opportunity to investigate the relationship between gender role beliefs and concurrency within diverse socioeconomic and partnership contexts. Using this representative household sample of low and middle SES white and African American youth, the goals of this study were 1) to examine whether participants’ attitudes towards relationship power were associated with males’ concurrency within heterosexual partnerships and 2) to assess whether this relationship varied by race/ethnicity, SES, and/or type of sexual partnership. We hypothesized that more equitable gender role beliefs would be associated with decreased concurrency among male respondents and sex partner concurrency among female respondents. We further hypothesized that stronger associations in this direction would be found among African American (versus white) youth, low (versus middle) SES youth, and casual (versus main) partnerships.

Methods

Study Design, Sampling, and Procedures

Data for the current study were derived from the baseline survey of a longitudinal study whose main objective was to explore the relationship between ethnicity and class, gender role beliefs, and sexual behavior among youth. The study is detailed elsewhere (27).

Data were collected from February, 2011 through May, 2013 among low and middle socioeconomic status (SES), sexually active, White and African American youth (N=352) living in Baltimore, MD. Participants were recruited from a citywide household sample based on 254,458 residential addresses from 699 of Baltimore’s 710 census block groups (CBGs). CBGs were excluded for the following reasons: six had no members of the eligible population, three were missing necessary education data, and two had zero estimated households. Households were randomly selected from CBGs chosen to represent low (no college education) and middle (some college education or higher) SES neighborhoods with majority White or African American populations. To yield as many respondents as possible in the white, college and white, no college domains, the sample was selected from the 310 CBGs with the highest concentrations of white, college and white, and no college age-eligible persons.

All sampled households (12,000) received a letter explaining the purpose of the study two weeks prior to being contacted by study staff. Research assistants contacted 10,509 households either by phone or in-person to determine if one or more 15–24 year olds lived in the home. Among the 281 households deemed eligible to participate, 237 agreed to participate, with one participant per household enrolled in the study. To participate, respondents were required to meet the age requirement and report ever having had vaginal intercourse with a person of the opposite sex. In households with more than one eligible

person, one adolescent was randomly selected for screening. The survey was administered by A-CASI (audio computer assisted self-interview) software in a private area in the participant's house. Following survey completion, participants received a \$25 pre-paid debit card for their time. For participants 18 years or older, written informed consent was obtained. For those under 18 years old, written informed assent was obtained in addition to written informed consent from a parent/guardian. This study was approved by the Johns Hopkins Bloomberg School of Public Health Institutional Review Board.

Survey Measures

Partner/Relationship-Level Variables—All partner and relationship-level variables were assessed for partnerships occurring in the past six months.

Outcome Variables: Two outcome variables were considered for regression analyses: index partner concurrency (for males) and sex partner concurrency (for females). We used different outcome measures for males versus females based on findings from the theoretical and empirical literature that suggest the relationship between gender role beliefs and index partner concurrency is particularly salient among males whereas the relationship between gender role beliefs and sex partner concurrency is most consequential among females (8, 15, 16, 18, 19, 23). For males, index partner concurrency (yes=1; no=0) was defined as self-report of having one or more sexual partnership(s) that overlapped in time with the reported sexual relationship. We assessed index partner concurrency by asking, for each partnership, “Did you have sex (meaning ONLY anal or vaginal sex) with anyone else while you were seeing [partner's name]?”. For females, sex partner concurrency (yes=1; no=0) was defined as the self-report of a partner having one or more sexual partnership(s) that overlapped in time with the reported sexual relationship. We assessed sex partner concurrency by asking, for each partnership, “Did [partner's name] have sex (meaning ONLY anal or vaginal sex) with anyone else at any point while you were seeing him?”.

Relationship/Partner Characteristics: Relationship characteristics considered for this study included type of partnership, condom use at last sex, and age difference between partners. Partner characteristics included participant report of partner's race/ethnicity, STI history, and Type of partnership (main; casual). Main partner was defined as “someone you have sex with and you consider to be the person you are serious about”. Casual partner was defined as “someone you've had sex with only once or a few times or you have sex with on an ongoing casual basis. The important thing is that this person is not a main partner to you”. Condom use at last sex was measured with the question “the last time that you had vaginal/anal sex with [partner's name], did you use a condom?” and dichotomized (yes; no). Partner history of a non-HIV STI was dichotomous (yes; no) and was assessed by asking, “Has [partner's name] ever been diagnosed with an STD?” Partner's HIV status was assessed by asking, “Has [partner's name] ever been HIV infected?” and dichotomized. Partner's race/ethnicity was categorized as African American, White, or other.

Individual Level Variables

Primary Exposure Variable: The primary independent variable considered was attitudes towards power in relationships. This construct was measured using the PAIR (Power and

Attitudes in Relationships) scale (28). PAIR was based on the theory of Gender and Power (29) and was originally developed and validated in a sample of African American women (N=417) living in Baltimore City. The scale consists of 8 self-reported items that represent four domains related to participants' beliefs regarding the balance of power in heterosexual relationships (i.e. perceived need to be in a relationship, division of household labor, sexual assertion, and decision-making). All items were measured on a four point Likert Scale from 1 (strongly agree) to 4 (strongly disagree) with lower scores reflecting traditional gender role beliefs that favor male dominance in relationships and higher scores indicating support for more gender-equitable relationships. In the original validation study, the scale was internally consistent (Cronbach's $\alpha = 0.79$) and represented a single factor.

In our study, the PAIR scale had an initial internal consistency reliability coefficient (Cronbach's α) of 0.65 among all females and 0.82 among all males. After excluding one item from both the males and female PAIR scales due to low factor loadings ($< .32$), reliability increased to 0.68 among females and 0.85 among males, levels which were considered acceptable (30).

Demographic and Behavioral Variables: Self-reported demographic characteristics included: sex (male; female), race/ethnicity (African American; white), and age (continuous). Participants' socioeconomic status (SES) was categorized as low or middle based on the participant's primary childhood guardian's level of education (low=high school diploma or less; middle=some college or more). Age at first sex (in years) was continuous and based on self-report. Number of sex partners in the past three months was dichotomized (0–1; 2+). Participant history of a non-HIV STI was dichotomized (yes; no) and included all those respondents who reported ever testing positive for Gonorrhea, Chlamydia, or Syphilis. Participant HIV status was also dichotomous and assessed by asking "Have you ever been tested for HIV, the virus that causes AIDS? What was the most recent result?"

Statistical Analyses

The current analyses were limited to male and female participants who reported having one or more heterosexual relationship in the past six months. For these analyses, we constructed "individual" and "partnership-level" datasets. The "individual dataset" contained data on individual-level demographics (e.g. participant's age) and risk behavior (e.g. participant's age at first sex) for each participant. The "partnership dataset" contained data on each sexual partnership reported for each participant in the past six months in addition to the individual-level data. Each participant could contribute data on up to seven partnerships. Participants who did not report any heterosexual partnership in the past 6 months (n=48), male-reported partnerships missing data on index partner concurrency (n=12), female-reported partnerships missing data on sex partner concurrency (n=19), and individuals with one or more missing PAIR scale items (n=1 male) were excluded from regression analyses.

Preliminary statistical analyses included PAIR scale validation, exploratory data analyses, estimation of statistical analysis weights to account for the study's complex sampling strategy and clustering of partnerships at the individual level, and estimation of weighted summary statistics at the individual and partnership levels. All analyses accounted for the

complex survey design, taking into consideration stratified sampling, clustering of partnerships within an individual, and sampling weights.

A PAIR score was constructed for each participant by summing item responses then dividing the total by the number of non-missing items. The psychometric properties of the PAIR scale were assessed separately for males and females using principle components analysis, exploratory factor analysis, and reliability analysis using alpha estimation. Weighted summary statistics included means and standard errors (SEs) for continuous variables and proportions for categorical variables. Significant differences between males and females were assessed using adjusted Pearson Wald F-statistics to account for the complex survey design. Continuous variables were examined for normalcy. Given the skewed distribution of PAIR scale scores among both males and females, the measure was Z-transformed for the purposes of bivariate and multivariate analyses. Kappa statistics were generated to assess racial concordance within partnerships. All statistical analyses were conducted using STATA version 11.0 software (31).

Using sexual partnerships as the unit of analysis (N=462), we conducted weighted bivariate and multivariate analyses with robust standard errors. All regression analyses were weighted by the total number of sexual partnerships per participant. Bivariate analyses using Pearson Wald F-statistics and simple logistic regressions were conducted to explore associations between PAIR score, demographics, behavioral variables, partner and relationship characteristics, and concurrency within a partnership. Multivariate logistic regression was then used to determine the association between an individual's PAIR score and concurrency within a partnership, adjusting for potential confounders. Adjusted analyses controlled for statistically and theoretically relevant confounders including age, participant's race/ethnicity, and SES. Last, we examined effect modification by variables identified in the literature as potential moderators for the relationship between gender role beliefs and concurrency. These included race/ethnicity, SES, and type of partnership. The process included: first, conducting multivariate analyses stratified by the moderating variable then including an interaction term for the moderator and PAIR score in our multivariate model. All analyses were stratified by sex using index partner concurrency as the outcome variable among males and sex partner concurrency as the outcome variable among females. Adjusted odds ratios, 95% confidence intervals, and p-values were used to assess significance in final models.

Results

Demographic and Behavioral Characteristics of the Sample

Tables 1 and 2 present descriptive statistics for male (n=106) and female (n=166) youth who reported a total of 462 sexual partnerships. Variables are organized by individual-level and partnership-level. Participants were a mean age of 21 (range: 15–24), 66% identified as African American, and 49% had a guardian with some college or more. The average age at first sex was significantly lower ($p=0.006$) among males (14.6) than females (15.7) and males also reported a significantly greater ($p=0.000$) number of partners in the past three months. Females had a significantly higher ($p=0.000$) average PAIR score (3.39, range: 1–4) than males (2.96, range: 1–4), indicating more equitable beliefs about power in

heterosexual relationships. Approximately nine percent of both males and females had ever been diagnosed with an STI and one female participant reported being HIV positive.

The number of heterosexual partnerships per person ranged from 1 to 7 for males and females with males reporting a mean of 2.27 partners in the past six months and females reporting a mean of 1.61 partners in the past six months (Not shown). Thirty-two percent of respondents described one partnership, 20% described two partnerships, 18% described three partnerships, and less than 10% described each of four, five, six, and seven partnerships. Females were significantly more likely than males to label a sex partner as a “main” partner (51% versus 24%, $p=0.000$). Females were significantly more likely to report sex partner concurrency in a partnership (28% versus 11%, $p=0.002$) and males were only slightly more likely to report index partner concurrency (32% versus 31%, $p=0.916$). Among females, 30% of African Americans and 25% of Whites reported sex partner concurrency (Not shown). Among males, 35% of African Americans and 15% of Whites reported index partner concurrency (Not shown). Condoms were used at last sex in 59% of partnerships. Six percent of males reported that a partner had an STI compared to 9% of females. Three percent of males and .4% of females reported that a sex partner was HIV positive.

Males: Attitudes Towards Relationship Power and Index Partner Concurrency

Among males, PAIR score was significantly associated with index partner concurrency in bivariate regression analysis (Unadjusted Odds Ratio (OR)= 0.49; 95% confidence interval [CI]: 0.26–0.91; $p=0.023$) such that males with more equitable beliefs regarding the balance of power in relationships were less likely to have a concurrent sexual relationship (See Table 3). Males who reported two or more partners in the past three months (OR= 6.73, 95% CI: 1.92–23.66, $p=0.003$) and a sex partner with an STI (OR=7.13, 95% CI: 1.55–32.75, $p=0.012$) were also more likely to report index concurrency in a partnership in bivariate analyses. Partner’s race/ethnicity was also significantly associated with index partner concurrency. In the bivariate model, males with a White partner were less likely to have a concurrent sexual relationship than males with an African American partner (OR=0.20, 95% CI: 0.05–0.85, $p=0.029$).

The multivariate model for the association between PAIR score and index partner concurrency is located in Table 4. Adjusting for participant’s race/ethnicity, SES, and age, there remained a significant association between PAIR score and index partner concurrency (Adjusted Odds Ratio (AOR)= 0.42; 95% CI: 0.19 – 0.91; $p=0.028$). Race/ethnicity was also significantly associated with index partner concurrency in the multivariate model (AOR= 0.17; 95% CI: 0.03 – 0.94, $p=0.042$).

Effect modification was tested by race/ethnicity, SES, and partner type (See Table 5). In racially stratified analyses, adjusting for participant’s age and SES, PAIR score was inversely associated with index partner concurrency among both African American (AOR=.45; 95% CI: 0.18–1.08; $p=0.073$) and White males (AOR=.28; 95% CI: 0.10–0.77; $p=0.014$). However, the association was only significant among White adolescent males. When a race/ethnicity by PAIR score interaction term was included in the final model, it was not significant ($p=0.403$). In multivariate analyses stratified by guardian’s education, PAIR was

significantly and inversely associated with index partner concurrency among middle SES (AOR=0.18; 95%CI: 0.06–0.50; $p=0.001$) but not low SES males ($p=0.809$) after adjusting for age and race/ethnicity. When a guardian's education by PAIR score interaction term was included in the multivariate model, it achieved statistical significance ($p=0.009$).

Stratification by type of partnership showed a significant association between PAIR and index partner concurrency in main (AOR=.08; 95%CI:0.17–0.40; $p=0.002$) but not casual partnerships, after adjusting for race/ethnicity, guardian's education, and age. The interaction between partnership type and PAIR score was statistically significant in the final multivariate model ($p=0.033$).

Females: Attitudes Towards Relationship Power and Sex Partner Concurrency

PAIR score was significantly associated with sex partner concurrency among female youth in bivariate regression analysis (OR=2.74; 95%CI: 1.48–5.07; $p=0.001$) (See Table 3). Among the other demographic, behavioral, and partnership characteristics tested in bivariate analyses, only partner's race/ethnicity was significantly associated with sex partner concurrency. Females with a non-White, non-African American sex partner were less likely to experience sex partner concurrency within a partnership than females with an African American partner (OR=0.07; 95%CI: 0.006–0.739; $p=0.028$).

The multivariate model for the association between PAIR score and sex partner concurrency among females is located in Table 4. There remained a significant positive association between PAIR score and sex partner concurrency (AOR= 2.45; 95%CI: 1.39 – 4.31; $p=0.002$) among females after adjusting for participant's race/ethnicity, SES, and age. Also significant in the final model was the association between SES and sex partner concurrency (AOR= 0.39; 95%CI: 0.16 – 0.96; $p=0.040$).

Race/ethnicity, SES, and partner type were examined as potential effect modifiers for the relationship between PAIR score and sex partner concurrency among females (See Table 5). Racially stratified analyses showed a positive and statistically significant association between PAIR and sex partner concurrency among African American (AOR=3.44; 95%CI: 1.51–7.85; $p=0.004$) but not White (AOR=1.54; 95%CI: 0.24–4.05; $p=.252$) females, after adjusting for age and guardian's education. In the multivariate model, the interaction between race/ethnicity and PAIR score was not statistically significant ($p=0.299$). Analyses stratified by guardian's education produced positive associations among both low SES (AOR=4.60; 95%CI: 2.3–9.0; $p=0.000$) and middle SES (AOR=1.78; 95%CI: 0.85–3.73; $p=0.129$) females, after adjusting for participant's age and race/ethnicity. However, the relationship was only significant among low SES females. When a guardian's education by PAIR score interaction term was included in the final model, it bordered on statistical significance ($p=0.070$). PAIR score and sex partner concurrency were positively, significantly associated in both casual (AOR=2.41; 95%CI: 1.17–4.97; $p=0.017$) and main (AOR=2.91; 95%CI: 1.46–5.80; $p=0.003$) partnerships among females, after adjusting for race/ethnicity, SES, and age. The interaction between partnership type and PAIR score was not statistically significant in the final multivariate model ($p=0.817$).

Discussion

The goals of this study were to quantitatively assess the associations between male and female youth's gender role beliefs and concurrency within heterosexual partnerships and to examine whether these associations were consistent across race/ethnicity, SES, and type of partnership. Concurrency was common in our study sample with rates of both index and sex partner concurrency comparable to similar studies among urban youth (8, 32, 33). Similar to previous studies, we found that males with more equitable beliefs regarding the balance of power in relationships were less likely to have a concurrent sexual relationship after adjusting for race/ethnicity, age, and SES (9, 11, 34). Females, however, were more likely to experience sex partner concurrency if they held more equitable beliefs about power in relationships – a finding which contradicts earlier work (15, 35). Taken together, our results contribute to a larger body of research which suggests that both equitable and inequitable gender-related attitudes can influence HIV/STI risk in youth (36). The study also suggests that further research is needed to explore the context of concurrency as it occurs within youth relationships.

Partnership type may be an important contextual factor that influences the translation of gender role beliefs into sexual risk behavior within youth's sexual partnerships. We found that the association between attitudes towards relationship power and concurrency manifested more strongly in main partnerships than casual partnerships among both sexes, and particularly among males. This finding echoes earlier work that identified differing partner dynamics surrounding sexual risk behavior in casual versus main partnerships (20–22, 26) and may also have implications for youth's sexual risk trajectory. Patterns linking gender-related attitudes and concurrency that are set in main partnerships during adolescence could put people at increased risk for HIV and other STIs in adulthood when long-term, serious sexual relationships are more common (37). When concurrency occurs in a long-term sexual relationship, a newly infected individual is more likely to quickly and recurrently expose a sex partner to the infection (38). This risk is compounded by lower levels of condom use in main versus casual partnerships (21, 39, 40).

Adding to the complexity of the relationship between gender role beliefs, sexual risk behavior, and partnership dynamics is the interwoven nature of gendered beliefs, race/ethnicity, and SES. The literature in this area is well-developed among low-income African Americans. It suggests that internalized gender norms, molded by economic and social forces such as lack of access to traditional forms of male power (e.g. financial success and status), push males towards concurrency while compelling their female partners to accept it (14–16, 18, 19, 23, 25). Our findings suggest that the relationship between socioeconomic context and gendered beliefs may be more nuanced than previously suggested and extend beyond a singular racial/SES group. The association between gender role beliefs and index partner concurrency was significant or approaching significance among both white and African American males. However, we found no relationship between gender role beliefs and index partner concurrency in the low SES group and a very strong relationship in the middle SES group. Among females, the strongest associations between gender role beliefs and sex partner concurrency were observed among low SES and African American females as expected, however, the relationship was not in the direction anticipated. These results

suggest that gender role beliefs may influence sexual risk behavior in both white and African American adolescents and that context may be important in determining how and the extent to which this relationship manifests.

Previous studies have identified multiple forms and motivations for concurrency with differing relationships to socioeconomic context and implications for sexual relationship dynamics and HIV/STI risk (41, 42). Low SES and African American females with more gender equitable beliefs, for example, may be more likely to accept a partners' concurrency and also be concurrent themselves. At least one study among African American adolescents found that reciprocal concurrency may be acceptable when there is discord in a main relationship (43). This could be particularly true for African American, low SES females who may gain status and material support through the maintenance of a long-term partnership and whose pool of potential partners is limited by the unbalanced sex ratio due to the high prevalence of incarceration among African American men (17, 35, 43). Reciprocal concurrency is of particular concern from an HIV/STI perspective as it puts both partners at increased risk for infection compared to one-sided sex partner concurrency (44). Alternatively, sex partner concurrency among male partners could be driven by female partners' equitable gender role beliefs. In focus group discussions with African American women in New York, participants cautioned that females who exercise power over sexual decision-making in their relationships stand a greater risk of sex partner concurrency (16).

Additionally, powerful contextual forces may shape practices around concurrency that serve to normalize the behavior regardless of individual gender role beliefs. Poverty and unemployment, in particular, have been linked to marital instability and may limit the feasibility of marriage in general – making men less appealing as and less interested in becoming potential spouses (45). Similarly, the unbalanced sex ratio due to the disproportionate incarceration of low-income African American men may make concurrent relationships a more viable partnering option for both men and women (43, 46). Our finding that gender role beliefs and index partner concurrency were associated in middle but not low SES males could reflect the strength of these external factors and broader norms surrounding concurrency that may render the behavior acceptable among low SES males regardless of individual-level beliefs about relationship power.

Findings suggest that there is a relationship between gender role beliefs and sexual concurrency among adolescents but that this relationship may be more complex than previously thought. Current theoretical models of sexual behavior may need to be expanded to capture the varying contexts within which concurrency occurs, recognizing that the practice itself serves as an umbrella term that captures a very diverse set of sexual relationships, partner dynamics, and motivations. Future quantitative studies in this area should move beyond the current standard for measuring concurrency with a direct question regarding overlapping sexual partnerships (47) to a set of questions that elucidate the nature of and motivation behind (e.g. reciprocal, reactionary)(41) sexual concurrency. Preliminary results from analyses comparing average PAIR scores in partnerships with different types of concurrency (no partners concurrent, both partners concurrent, only the male was concurrent, only the female was concurrent) suggest that the relationship between attitudes towards power in relationships and concurrency may differ by concurrency type.

This study has a few limitations that warrant consideration. First, these data were collected via self-report and may be subject to measurement error related to participant recall and social desirability bias. Partners' behaviors (e.g. sex partner concurrency) and characteristics (e.g. STI history), in particular, may be under-reported. When measured in dyads, agreement between perceived sex partner concurrency and actual sex partner concurrency is low with both partners often incorrectly presuming that they are in mutually monogamous relationships (5, 32, 48). Adolescent females, in particular, underestimate sex partner concurrency more often than adolescent males (32). Although measures were taken to limit the influence of social desirability bias (i.e. use of ACASI for survey administration), over and underreporting of sexual behavior may exist. Second, although we did measure type of partnership (casual or main), we were unable to capture additional relationship qualities (e.g. relationship length, commitment, trust, respect) that are associated with monogamy among youth and could influence the association between PAIR score and concurrency (17, 49). Third, the PAIR scale does not measure attitudes towards female dominance in relationships. It is possible that this attitude exists among youth in our study and can influence their sexual behavior but is not captured by the scale. Last, while the generalizability of these results has been enhanced by the study design (i.e. household-based random sample based on race/ethnicity and SES), gender is a context-specific construct and, thus, findings from this study may not be generalizable beyond urban adolescent populations.

Conclusions

Despite its limitations, this study has important implications for the prevention of HIV/STIs among heterosexual urban youth. Findings suggest that attitudes towards relationship power are associated with sexual concurrency in this population and that this relationship may manifest differently in the contexts of racial, socioeconomic, and partnership differences. However, the unexpected direction of this relationship among females, differences between casual and main partnerships, and the strong association detected among middle but not low SES males suggests that further research is needed to better understand the nuances of this relationship. Reproductive and sexual health interventions that challenge people to critically reflect on gender-related beliefs, expectations, and norms have been shown to be more effective than gender-neutral programs in preventing poor sexual health outcomes (50). Implementing targeted gender-transformative interventions that recognize the complex relationship between socioeconomic context, partner dynamics, gender, and sexual behavior is an important step towards reducing HIV/STI risk in this vulnerable population.

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Table I

Characteristics of Males (n=106) and Females (n=166) Reporting at Least One Heterosexual Partnership in the Past 6 Months

	Total (n=272)	Males (n=106)	Females (n=166)	
Individual Characteristics	(%)	(%)	(%)	p
Age (mean, SE)	20.8 (.22)	20.2 (.35)	21.4 (.22)	0.005**
Race				
African American	66.2	70.0	62.2	
White	33.8	30.0	37.8	0.288
Guardian's Education (SES)				
High school Diploma or less	50.6	48.1	53.3	
Some College or more	49.4	51.9	46.7	0.400
Partners in Past 3 Months				
0–1	66.7	52.7	81.4	
2+	33.3	47.3	18.6	0.000**
Age at First Sex (mean, SE)	15.15 (.19)	14.6 (.31)	15.7 (.21)	0.006**
History of STI (non-HIV), yes	9.5	9.2	9.6	0.933
HIV Positive, yes	0.1	0	0.2	0.320
Average PAIR Score (mean, SE)	03.17 (.05)	2.96 (.08)	3.39 (.04)	0.000**

**
p<.01

Table II

Characteristics of Respondents' Partners and Relationships in the Past 6 Months Reported by Males (n=221) and Females (n=241)

	Total (n=462)	Males (n=221)	Females (n=241)	
Partnership Characteristics	(%)	(%)	(%)	p
Partner's Race/Ethnicity				
African American	71.0	76.4	55.6	0.197
White	19.5	15.1	31.8	
Other	09.5	08.5	12.4	
Partner Type				
Casual	69.2	75.8	49.2	0.000**
Main	30.8	24.2	50.8	
Index Partner Concurrency, yes	31.3	31.6	30.5	0.916
Sex Partner Concurrency, yes	14.9	10.8	27.6	0.002**
Condom use at last sex, yes	58.6	57.5	61.9	0.512
Partner had STI (non-HIV), yes	06.8	05.7	08.6	0.384
Partner had HIV, yes	01.9	02.8	00.4	0.146

**
p<.01

Table III

Bivariate Analyses: Associations between Individual and Partnership-level Characteristics and Concurrency within Male and Female-Reported Partnerships (N=431)

		Males (n=209) Index Concurrency		Females (n=222) Sex Partner Concurrency	
		Unadjusted OR	p	Unadjusted OR	p
Individual Characteristics					
Race/Ethnicity					
African American	ref			ref	
White	.34 (.06–2.01)	0.236		.77 (.27–2.16)	0.621
Age	1.16 (.89–1.50)	0.260		1.02 (.82–1.27)	0.855
Guardian's Education (SES)					
High school or less	ref			ref	
Some College or more	2.30 (.54–9.77)	0.259		.49 (.19–1.25)	0.137
Partners in Past 3 Months					
0–1	ref			ref	
2+	6.73 (1.92–23.66)	0.003**		1.22 (.46–3.24)	0.682
Age at First Sex	1.26 (.98–1.63)	0.073		0.87 (.686–1.12)	0.286
Standardized PAIR Score	0.49 (.26–.91)	0.023*		2.74 (1.48–5.07)	0.001**
History of STI	0.46 (.07–3.08)	0.427		2.39 (.81–7.04)	0.114
Partnership-Level Variables					
Partner's Race/Ethnicity					
African American	ref			ref	
White	0.20 (.05–.85)	0.029*		0.774 (.27–2.19)	0.627
Other	0.19 (.019–1.80)	0.147		0.067 (.006–.739)	0.028*
Partnership Type					
Casual	ref				
Main	0.89 (.46–1.76)	0.746		0.67 (.36–1.27)	0.217
Condom use at last sex, yes	1.54 (.58–4.13)	0.384		.938 (.40–2.19)	0.882
Partner had STI (non-HIV)	7.13 (1.55–32.75)	0.012*		2.71 (.68–10.63)	0.153

*
p<.05

**
p<.01

Table IV

Multivariate Analyses: Adjusted Associations between Individual and Partnership-level Characteristics and Concurrency in Male and Female-Reported Partnerships (N=425)

	Males (n=205) Index Partner Concurrency		Females (n=220) Sex Partner Concurrency	
	Adjusted OR	p	Adjusted OR	p
PAIR Score	0.42 (0.19 – 0.91)	0.028 *	2.45 (1.39–4.31)	0.002 **
Race/Ethnicity				
African American	ref		ref	
White	0.17 (0.03–0.94)	0.042 *	0.91 (0.35–2.37)	0.850
Guardian's Education (SES)				
High school or less	Ref			
Some College or more	1.84 (0.37–9.15)	0.453	0.39 (0.16–0.96)	0.040 *
Age	1.20 (0.84–1.74)	0.316	1.05 (0.87–1.27)	0.603

*
p<.05

**
p<.01

Table V

Multivariate Analyses Stratified by Race/Ethnicity, SES, Partner Type and Sex: Adjusted Associations between PAIR Score and Concurrency in a Partnership

	Males			Females		
	n	Adjusted OR	p	n	Adjusted OR	p
Race/Ethnicity						
African American	148	0.45 (0.18–1.08) ^a	0.073	144	3.44 (1.51–7.85) ^a	0.004 ^{**}
White	71	0.28 (0.10–0.77) ^a	0.014 [*]	95	1.54 (0.24–4.05) ^a	0.252
Guardian's Education (SES)						
High school or less	82	1.15 (0.37–3.52) ^b	0.809	83	4.60 (2.34–9.04) ^b	0.000 ^{**}
Some College or more	123	0.18 (0.06–0.50) ^b	0.001 ^{**}	137	1.78 (0.85–3.73) ^b	0.129
Partner Type						
Casual	126	0.55 (0.26–1.18) ^c	0.127	65	2.41 (1.17–4.97) ^c	0.017 [*]
Main	73	0.08 (0.17–0.40) ^c	0.002 ^{**}	154	2.91 (1.46–5.80) ^c	0.003 ^{**}

^a Adjusted for participant's age and guardian's education

^b Adjusted for participant's age and race/ethnicity

^c Adjusted for participant's age, race/ethnicity, and guardian's education

^{*} p<.05

^{**} p<.01