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Ecodevelopmental Trajectories of Family Functioning: Links with HIV/STI Risk Behaviors and STI among Black Adolescents

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Abstract

We examined the effects of family functioning trajectories on sexual risk behaviors and STI in adolescents. A sample of 850 predominantly (80%) Black adolescents from Michigan, United States, was assessed at baseline, 12, 24, and 36 months post-baseline. Adolescents were from working-class families with a mean age of 14.9 years (SD = .64, Range = 13.9 to 16.9) at baseline. Participants completed measures of family functioning at each time point. At 36 months post-baseline, levels of sexual risk behaviors, including sex initiation, unprotected sex, and alcohol or drug use before last sexual intercourse, and STIs were assessed. Latent class growth analysis (LCGA) yielded four-class solutions for family conflict and parent support. Adolescents with high or increasing family conflict trajectories, and low or decreasing family support trajectories, were at relatively greater risk of sexual risk behaviors and STIs. Yet, the additional trajectories differ across outcomes highlighting the complexities of the role of family functioning on sexual risk behaviors and STIs over time. Multiple group LCGA indicate some findings vary as a function of gender.

Keywords

Adolescents; HIV/STI; family functioning; Black/African American; trajectories

Human immunodeficiency virus/sexually transmitted infections (HIV/STI) remains a major public health concern in the United States (Centers for Disease Control and Prevention [CDC-P], 2013a). Although all adolescents are at increased risk for HIV/STI, Black youth are disproportionately affected (CDC, 2014). Black youth engage in sexual risk behaviors, including sex initiation, unprotected sex, and using alcohol or drugs before last sexual intercourse, and are disproportionately affected by STI, which place them at increased risk of HIV infection (CDC-P, 2013a, 2013b, 2014). While researchers report that family functioning, including decreased family conflict and higher levels of parent support, can prevent and reduce sexual risk behaviors and STI among Black youth (Cordova, Heinze et

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al., 2014; Harris, Sutherland, & Hutchinson, 2013), the association of longitudinal changes in family functioning with sexual risk behaviors and STI among Black adolescents is not well understood. This is a critical gap in the literature, because developing a more complete understanding of this relation can inform interventions to (a) prevent and reduce new HIV infections and (b) reduce HIV-related health disparities, which represent two of the four priorities identified in the *National HIV/AIDS Strategy for the United States* report (The White House, 2015). The purpose of this study was to identify ecodevelopmental trajectories that characterize longitudinal changes in family conflict and parent support and to examine whether and to what extent these trajectories are linked to sex initiation, unprotected sex, using alcohol or drugs before last sexual intercourse, and STI among a sample of predominantly Black youth. Additionally, we sought to examine whether and to what extent the effects of these trajectories on sexual risk behaviors and STI vary as a function of gender.

Sexual Risk Behaviors and HIV/STI Prevalence

Youth Risk Behavior Surveillance Survey results indicate that, telative to non-Hispanic whites (3.3%), Black (14.0%) adolescents are more likely to report sex initiation (CDC-P, 2014). Although Black (35.3%) youth, relative to non-Hispanic whites (42.9%), are less likely to report unprotected sex at last sexual intercourse, Black (22.8%) adolescents are more likely to report drinking alcohol or using drugs before last sexual intercourse than non-Hispanic whites (21.3%; CDC-P, 2014). Furthermore, while all adolescents are at increased risk of STI, Black adolescents are disproportionately affected (CDC-P, 2013b). In 2012, relative to non-Hispanic white adolescents (830 / 100,000), Black youth (4,978 / 100,000) disproportionately reported cases of chlamydia (CDC-P, 2013b). Given that sexual risk behaviors and STI increase risk for HIV infection (Henning et al., 2014; Sexton, Garnett, & Rottingen, 2005), Blacks experience the most severe burden of HIV. Despite accounting for approximately 12% of the total U.S. population, Blacks accounted for an estimated 44% of new HIV infections in 2010 (CDC-P, 2013a).

Antecedents of Sexual Risk Behaviors and HIV/STI

Ecological, developmental, and cultural factors shape Black adolescent sexual risk behaviors and STI. At the ecological level, family, gender, and social class differences influence sexual risk behaviors and STI. For example, family functioning, including higher levels of family support and decreased conflict, have been shown to prevent and reduce sexual risk behaviors and STI in Black adolescents (Crosby, Wingood, DiClemente, & Rose, 2002; Murry, Simons, Simons, & Gibbons, 2013). Given that differences in parents' child-rearing practices and gender role expectations may exist among Black families (Barman-Adhikari, Cederbaum, Sathoff, & Toro, 2014; Howard, Rose, & Barbarin, 2013), researchers have shown that the influence of family functioning on Black adolescent sexual risk behaviors varies as a function of gender (Kogan, Brody, Chen, Grange, Slater, & DiClemente, 2010; Steiner, Swartzendruber, Rose, & DiClemente, 2014). Higher levels of family functioning, including parent-adolescent communication, has been associated with a lower likelihood of unprotected sex for Black females but not males (Kogan et al., 2010). Beyond the role of family and gender, HIV/STI inequities experienced by Black youth are confounded with social class differences, such that socioeconomic-related risk is predictive of STI infection

(Sales, Smearman, Swartzendruber, Brown, Brody, & DiClemente, 2014). Understanding the role of family, gender, social class differences and developmental factors on adolescent HIV/STI risk behaviors should be viewed through a cultural lens. From this perspective, culture is a larger system that encompasses and shapes the antecedents of HIV/STI risk behaviors (Windle et al., 2015). Studies on family functioning and sexual risk behaviors and STI are limited, however, such that they are cross-sectional (Crosby et al., 2002; Murry et al., 2013), and a developmental perspective is warranted.

Rather than remaining static, family functioning during adolescence is dynamic (Dupéré, Lacourse, Willms, Leventhal, & Tremblay, 2008; Institute of Medicine, 2011). Indeed, empirical studies support the notion that adopting a developmental perspective to inform family-level etiological research might provide vital information for interrupting the sequelae of Black adolescent sexual risk behaviors and STI. For example, Choe and colleagues (2014) reported four distinct trajectories of family conflict among Black adolescents: persistently high (3% of sample), high decreasing (10%), low increasing (11%), and persistently low (75%). Furthermore, trajectories of family functioning have been linked in important ways to various adolescent outcomes, including substance use (Cordova, Heinze et al., 2014; Tobler & Komro, 2010), antisocial behaviors (Trentacosta et al., 2011), and mental health problems (Choe, Stoddard, & Zimmerman, 2014; Juang, Syed, & Cookston, 2012). Essentially, findings indicate that, relative to adolescents with high family functioning, youth in low, decreasing, or inconsistent family functioning trajectories are at greater risk for substance use, antisocial behaviors, or mental health problems (Choe, Stoddard, & Zimmerman, 2014; Cordova, Heinze et al., 2014; Tobler & Komro, 2010). A critical gap in the literature, however, is that investigators have not yet examined the effects of developmental trajectories of family functioning on sexual risk behaviors and STI among Black adolescents. Given that the association of family functioning with adolescent risk behaviors is well established in cross-sectional designs, examining these effects in a developmental framework is a next logical step.

Ecodevelopmental Theory

The ecodevelopmental framework posits that the family microsystem is the most influential system on adolescent HIV/STI risk behavior (Szapocznik & Coatsworth, 1999). While adolescents are embedded in interrelated and integrated systems (i.e., micro, meso, exo, macro) that influence and are influenced by youth, the family microsystem is the most proximal system through which the effects of other systems on youth operate (Castro, Marsiglia, Kulis, & Kellison, 2011; Paquette & Ryan, 2001). Thus, families characterized by lower levels of family conflict and higher levels of family support may attenuate the effects of macrosystem processes, including gender and cultural norms and social class differences, on adolescent HIV/STI risk behaviors and STI. This framework was used to guide the hypotheses in this study.

The Present Study

In the present study, we identified trajectories of family functioning (i.e., family conflict and parent support), and examined whether and to what extent these trajectories are linked with

sexual risk behaviors and STI among a sample of predominantly Black youth. Because previous researchers have indicated that trajectories of family functioning that positively increase over time are linked with a decreased risk of adolescent substance use, antisocial behaviors, or mental health problems (Choe et al., 2014; Cordova, Heinze et al., 2014; Tobler & Komro, 2010; Trentacosta et al., 2011), we extended this logic and hypothesized that high or increasing trajectories of family conflict would be associated with increased risk of sexual risk behaviors and STI. Conversely, high or increasing trajectories of parent support would be associated with a decreased risk of adolescent sexual risk behaviors and STI among Black adolescents. Additionally, we examined whether and to what extent the effects of developmental trajectories of family functioning on sexual risk behaviors and STI vary as a function of gender.

Methods

Sample

To be eligible for this study, participants had to be: (a) enrolled in one of the four targeted public high schools in a large mid-western city, (b) have a grade point average (GPA) of 3.0 or lower at the end of eighth grade, and (c) self-identify as Black, non-Hispanic White, or both (this latter criteria was included because all other racial/ethnic groups combined composed only 3% of the public high school population at the time of the study, and we could not do any meaningful comparisons across groups even though group differences are expected). The primary goal of the parent study was to examine the link between school dropout and health risk behaviors. Adolescents who were diagnosed as emotionally or developmentally impaired by the school were not eligible to participate. Study approval was granted from our Institutional Review Board and from staff at the four participating high schools. Participant consent and parental (passive) consent for minors were obtained prior to participation in the study. Of the 979 eligible participants, 850 adolescents were enrolled in the study (13.2% refusal rate). The study sample consisted of primarily (N = 681, or 80%) Black adolescents, followed by non-Hispanic white (N = 143, or 17%), and mixed Black and non-Hispanic white (N = 26, or 3%). The sample was 50% female, with a mean age of 14.9 years (SD = 0.64; Range 13.9–16.9) at baseline (Table 1). At 12 months post-baseline, the sample had a mean age of 15.9 years (SD = 0.63; Range 14.9–18.0). At 24 and 36 months post-baseline, mean ages were 16.8 (SD = 0.64; Range 15.9–18.9) and 17.8 (SD = .64; Range 16.8–20.0) years, respectively. Participants represented 37 census tracts in 143 census block groups from Flint, Michigan.

Procedure

Adolescents were assessed at baseline, 12, 24, and 36 months post-baseline. Participants completed annual face-to-face interviews conducted in private rooms in schools or in a community setting. Interviews lasted approximately 60 minutes. Additional methodological details have been reported elsewhere (Zimmerman et al., 2002).

Measures

Demographics—Demographic data were collected to assess participants' age, gender, race, and grade. Gender and race were self-reported at baseline. Family Socioeconomic

Status (SES) score was assessed based on the highest occupational prestige score of either of the participant's parents (Nakao & Treas, 1990). Scores were constructed from three indices: a prestige rating of a given occupation and the concomitant educational attainment and income levels for that occupation. Participant scores in this study ranged from 29.28 (private household work) to 64.38 (professional). The mean occupational prestige score was 39.92 (SD = 10.4), which represented blue-collar employment.

Family conflict—Five items from the Family Environment Scale assessed reported levels of family fighting and acting out (Moos & Moos, 1981). Participants indicated how often a series of statements represented their family situations, specifically the people they lived with. An example statement included, “Family members hit each other in anger” (α = 0.77). The response format was a Likert-type scale, ranging from “1 = Hardly ever” to “4 = Often.”

Parent support—Parent support was measured with 5 items (α = 0.89) from the Parental Support Scale (Procidano & Heller, 1983). Participants were asked the extent to which they endorsed statements about their relationships with their primary caregiver. An example question was, “I rely on my mother/father for moral support.” Response options ranged from “1=not true” to “5 =very true.” The scale was designed to assess emotional support, problem solving, and moral support from primary caregivers. At baseline, we did not distinguish between mother and father support; therefore, “parent support” was used. In subsequent years (12, 24, and 36 months post-baseline) we delineated between “mother support” and “father support.” Because less than two-thirds of the sample reported a father–child relationship, mother support was employed.

Sexual risk behaviors and STI—Given that our research interest was to identify risk among youth, rather than the degree or magnitude of risk, or developing cut-off scores for a predictor variable, which can be methodologically problematic (Royston, Altman, & Sauerbrei, 2006), we treated outcome variables as binary. Dichotomizing variables yields overall reduced statistical power and thus is a more conservative approach (Ragland, 1992). Therefore, all sexual risk behavior and STI responses were treated as binary variables 0 = no risk (never) or 1 = risk (at least once) and were assessed at the last time point (i.e., 36 months post-baseline).

Sex initiation: Participants were asked, “In your lifetime, have you had sexual intercourse (sex)?” Response options were “No = 0” and “Yes = 1.”

Unprotected sex: Participants were asked, “How often have you used a condom when you've had sexual intercourse (sex) in the last year?” Response options ranged from “1 = never” to “5 = most of the time.”

Drank alcohol before sexual intercourse: Respondents were asked, “In the last year, when you had sexual intercourse (sex), how often did you use alcohol?” Responses ranged from “1 = never” to “5 = most of the time.”

Used illicit drugs before sexual intercourse: Participants were asked, "In the last year, when you had sexual intercourse (sex), how often did you use any illegal drugs?" Responses ranged from "1 = never" to "5 = most of the time."

Sexually transmitted infections: To assess for STIs, participants were asked, "In the last year, have you ever had a sexually transmitted disease such as syphilis or gonorrhea?" Response options were "No = 0" and "Yes = 1."

Analytic Approach

The analytic approach proceeded in five steps. First, we conducted a descriptive statistics analysis—to examine sexual risk behaviors and STI by race, gender, and SES—and an attrition analysis. Second, we used latent class growth analysis with maximum likelihood estimation to examine linear slopes to identify number of class trajectories for family conflict and parent support on the entire sample (Jung & Wickrama, 2008; Muthén & Asparaouhov, 2006). Third, we determined the most likely family conflict and parent support class membership using the highest posterior class probability for each individual, and then we cross-tabulated the most likely class membership variable with (a) our sex initiation outcome variable with the entire sample, and (b) unprotected sex, alcohol or drug use before sexual intercourse, and STI outcome variables at 36 months post-baseline with only sexually active youth. This approach was suitable given the high entropy (L. Muthén, personal communication, April 16, 2014). Fourth, utilizing the entire sample, we estimated five models each for family conflict and parent support with the sex initiation outcome (lifetime sex at 36 months post-baseline). We also estimated five models each for family conflict and parent support with each sexual risk behavior (i.e., past 12 months unprotected sex, alcohol or drug use before last sexual intercourse, and past 12 months STI) using only the sample of sexually active youth at 36 months post-baseline. We included covariates to account for group differences based on gender, race, and socioeconomic status. Fifth, we conducted an LCGA multiple group analysis using the "known classes" function in *Mplus* (Muthén & Muthén, 1998–2012) to examine whether and the extent to which the effects of family functioning trajectories on sexual risk behaviors and STI vary as a function of gender.

We made several assumptions: variances of intercepts were assumed equal across latent classes, and residual variances were assumed equal across both classes and time point. Additionally, we constrained the variances of the slope growth factors to zero (Jung & Wickrama, 2008; Nagin & Land, 1993). All analyses were conducted using *Mplus* version 7 (Muthén & Muthén, 1998-2012). Missing data were handled by full information maximum likelihood (FIML), which is the default in *Mplus* (Muthén & Muthén, 1998–2012). FIML utilizes all available data for parameter estimation, and simulation studies indicate that maximum algorithms appear superior to traditional ad hoc missing-data approaches (Enders, 2009).

The Akaike Information Criteria (AIC), Bayesian Information Criterion (BIC), and sample-adjusted BIC were used to select the models with the smallest combination of population misfit and sampling error. The AIC, BIC, and sample-adjusted BIC are based on the negative log likelihood of the model with a penalty function for the number of parameters.

Comparatively smaller values for all indices indicate the best model (Li et al., 2001; Muthén, 2004). Entropy, a summary measure of how well people are classified into classes, is measured on a 0 to 1 scale; entropy greater than .80 indicates more distinct groups (Acock, 2008; Muthen, 2004). The Vuong, Lo, Mendell & Rubin (VLMR) test examines the number of latent classes based on the following hypotheses: H_0 – the number of latent classes is k – 1, and H_1 – the number of latent classes is k. In instances where the p value is greater than .05, we would reject the null hypothesis. Essentially, the VLMR test examines the likelihood ratio of models, relative to its theoretical distribution (Tolvanen, 2007).

Results

A descriptive analysis of outcome variables by demographic characteristics can be seen in Table 1. At baseline, 61.8% of participants reported having had sexual intercourse in their lifetime. At 12, 24, and 36 months post-baseline, 62.6%, 62.2%, and 65.2% of participants, respectively, reported having had sexual intercourse in the 12 months prior to the survey. A descriptive analysis of family conflict and parent support by race are reported in Table 2.

Attrition Analysis

Across 12, 24, and 36 months post-baseline, retention rates were 94% (n = 799), 90.4% (n = 768), and 87.8% (n = 746), respectively. When compared to those participants missing at 36 months post-baseline, youth present at 36 months post-baseline differed neither by race, $\chi^2(2) = 3.50$ ($p = .17$), or by socioeconomic status, $t(848) = .10$ ($p = .92$). A higher proportion of the 36 months post-baseline sample was female, making up 64.5% of the sample as compared to 50% at baseline, $\chi^2(1) = 6.02$ ($p < .05$). Participants present at 36 months post-baseline did not differ from those missing at 36 months post-baseline in both baseline family conflict, $t(845) = -1.52$ ($p = .12$), and parent support $t(846) = 1.03$ ($p = .30$).

Family Conflict Class Membership

Latent class growth analysis (LCGA) yielded a four-class solution. Model fit indices indicated that, relative to a three-class trajectory model (BIC = 4549.00, entropy 0.89), the BIC and entropy values decreased to 4417.18 and 0.84 in the four-class trajectory model, indicating an improvement in model fit. Although the BIC value decreased in the five-class trajectory (BIC = 4377.78), the VLMR tests were significant for models with three- ($p < 0.01$) and four- ($p = 0.05$) class trajectory groups, and non-significant for the five-class trajectory model ($p = 0.42$). Therefore, we identified the four-class trajectory model as the most parsimonious. Class 1, hereafter referred to as *High-Decreasing Family Conflict* ($\alpha_0 = 2.68$, SE = 0.07, $p < .001$; $\alpha_1 = -.38$, SE = 0.03, $p < .001$), consisted of 8.3% (n = 71) of participants. Approximately 6.6% (n = 56) of participants were in class 2, referred to as *High-Increasing Family Conflict* ($\alpha_0 = 2.29$, SE = .13, $p < .001$; $\alpha_1 = .26$, SE = 0.04, $p < .001$). Class 3 was composed of 67.2% (n = 571) of participants, and this class is referred to as *Low-Decreasing Family Conflict* ($\alpha_0 = 1.64$, SE = 0.02, $p < .001$; $\alpha_1 = -13$, SE = 0.01, $p < .001$). Finally, 17.9% (n = 152) of participants were in class 4, *Low-Increasing Family Conflict* ($\alpha_0 = 1.78$, SE = 0.04, $p < .001$; $\alpha_1 = .12$, SE = 0.04, $p < .01$). In general, the *High-Decreasing* and *Low-Decreasing* trajectories decreased over time and the *High-Increasing* and *Low-Increasing* trajectories increased over time (Figure 1).

Crosstabulations of Family Conflict with Sexual Risk Behaviors and STI at 36 Months Post-Baseline

We determined the most likely family conflict class membership using the highest posterior class probability for each individual and then cross-tabulated the most likely family conflict class membership variable with our 36 months post-baseline sex initiation outcome variable using the entire sample, and unprotected sex, alcohol or drug use before sex, and STI outcomes at 36 months post-baseline with only the sexually active youth. Family conflict class membership was related to past 12 months unprotected sex, $\chi^2(3) = 14.91$ ($p < .01$). The prevalence for past 12 months unprotected sex were 58.1% (n = 193; *Low-Decreasing*), 54.8% (n = 46; *Low-Increasing*), 80.0% (n = 36; *High-Increasing*), and 76.9% (n = 40; *High-Decreasing*), respectively. The prevalence of drinking alcohol before sexual intercourse was 31.0% (n = 103; *Low-Decreasing*), 42.9% (n = 36; *Low-Increasing*), 53.3% (n = 24; *High-Increasing*), and 40.4% (n = 21; *High-Decreasing*), respectively. The prevalence for using drugs before sexual intercourse was 24.4% (n = 81; *Low-Decreasing*), 36.9% (n = 31; *Low-Increasing*), 42.2% (n = 19; *High-Increasing*), and 30.8% (n = 16; *High-Decreasing*), respectively. Family conflict class membership was related to past year STI, $\chi^2(3) = 16.49$ ($p = .001$). The prevalence of STI among classes was 3.3% (n = 11; *Low-Decreasing*), 10.7% (n = 9; *Low-Increasing*), 11.1% (n = 5; *High-Increasing*), and 15.4% (n = 8; *High-Decreasing*), respectively. Paired comparisons with bonferonni correction to adjust for multiple comparisons revealed that participants in the *Low-Decreasing* class had fewer than expected past 12 months STI (observed = 11, expected = 21.4, $z = -3.9$, $p < .001$). No other significant relationships were found.

Family Conflict Latent Class Growth Analysis with Sexual Risk Behaviors and STI at 36 Months Post-Baseline

Results from the entire sample (Table 3) indicate that, relative to the *Low-Increasing* class, the *Low-Decreasing* class was less likely to report sex initiation at 36 months (OR = 0.67). Table 4 shows that after controlling for gender, race, and socioeconomic status, findings indicate that, among sexually active youth, relative to the *Low-Increasing*, *High-Decreasing*, and *High-Increasing* classes, the *Low-Decreasing* class was less likely to report unprotected sex (OR = 0.97, 0.32, and 0.32, respectively), alcohol (OR= 0.54, 0.70, and 0.36, respectively) or drug use (OR = 0.44, 0.76, and 0.49, respectively) before sexual intercourse. Additionally, the *Low-Increasing* class was more likely to report alcohol use (OR = 1.28) before sexual intercourse compared to the *High-Decreasing* class. The *Low-Increasing* and *High-Decreasing* classes were less likely to report alcohol use before sexual intercourse (OR = 0.66 and 0.51, respectively) than the *High-Increasing* class. Finally, when compared to the *High-Increasing* class, the *Low-Increasing* class was more likely to report drug use before sexual intercourse (OR = 1.11).

Parent Support Class Membership

LCGA yielded four trajectories. Model fit indices indicated that, relative to a three-class trajectory model (BIC = 7,642.81, entropy .82), the BIC value decreased to 7,538.45 and entropy remained at .82 in the four-class trajectory model, indicating an improvement in model fit. Although the BIC value decreased in the five-class trajectory (BIC = 7,485.66),

the VLMR tests were significant for models with three- ($p < 0.001$) and four- ($p = 0.01$) class trajectory groups, and non-significant for the five-class trajectory model ($p = 0.50$). Thus, we identified the four-class *Parent Support* trajectory model as the most parsimonious. Class 1, hereafter referred to as *Low-Stable* ($\alpha_0 = 2.31$, SE = 0.18, $p < .001$; $\alpha_1 = -0.07$, SE = 0.07, p > .05), consisted of 7.7% (n = 65) of participants. Approximately 12% (n = 101) of participants were in class 2, referred to as *Low-Increasing* ($\alpha_0 = 2.55$, SE = 0.17, $p < .001$; $\alpha_1 = .56$, SE = 0.09, $p < .001$). Class 3, *High-Decreasing,* was composed of 21.1% (n = 179) of participants ($\alpha_0 = 3.83$, SE = .10, $p < .001$; $\alpha_1 = -.23$, SE = 0.06, $p < .001$). Fifty-nine percent (n = 503) of participants were in class 4, a *High-Increasing* group ($\alpha_0 = 4.45$, SE = 0.03, $p < .001$; $\alpha_1 = .04$, SE = 0.02, $p < .05$). In general, the *Low-Increasing* and *High-Increasing* trajectories increased over time, *High-Decreasing* trajectory decreased over time, and the *Low-Stable* trajectory remained constant over time (Figure 2).

Crosstabulations of Parent Support with Sexual Risk Behaviors and STI at 36 Months Post-Baseline

Parent support class membership was significantly related to having past 12 months unprotected sex, $\chi^2(3) = 17.51$ ($p = .001$). The prevalence for having had past 12 months unprotected sex was 81.8% (n = 27; *Low Stable*), 74.6% (n = 44; *Low-Increasing*), 54.8% (n = 172; *High-Increasing*), and 67.3% (n = 72; *High-Decreasing*), respectively. After adjusting for multiple comparisons, paired comparisons revealed that participants in the *High-Increasing* class (observed = 172, expected = 192.8, z = −3.9, $p < .001$) had fewer than expected reports of past 12 months unprotected sex. No other significant relationships were found.

Parent Support Latent Class Growth Analysis with Sexual Risk Behaviors and STI at 36 Months Post-Baseline

As can be seen in Table 3, results from the entire sample indicate that, relative to the *High-Decreasing* and *High-Increasing* classes, the *Low Stable* class was significantly less likely to report sex initiation at 36 months post-baseline (OR = 0.79 and 0.72, respectively). The *High-Increasing* class was more likely to report sex initiation at 36 months post-baseline (OR = 1.88), as compared to the *Low-Increasing* class. Finally, relative to the *High-Increasing* class, the *High-Decreasing* class was less likely to report sex initiation at 36 months post-baseline (OR = 0.92).

As can be seen in Table 5, LCGA indicates that, among sexually active youth, relative to the *High-Increasing* class, the *Low-Stable* class was more likely to report unprotected sex (OR = 5.00), and alcohol (OR = 1.79) or drug use (OR = 2.79) before sexual intercourse. Furthermore, when compared to the *High-Increasing* class, the *High-Decreasing* class was more likely to report unprotected sex (OR = 2.29), and alcohol (OR = 2.10) or drug use (2.14) before sexual intercourse. Relative to the *High-Increasing* class, the *Low-Increasing* class was more likely to report unprotected sex (OR = 3.52), and alcohol use (OR = 1.39) before sexual intercourse. When compared to the *High-Decreasing* class, the *Low-Stable* class was more likely to report alcohol (OR = 1.17) or drug use (OR = 1.31) before sexual intercourse. Relative to the *High-Decreasing* class, the *Low-Increasing* class was less likely to report alcohol (OR = 0.66) or drug use (OR = 0.44) before sexual intercourse. The *Low-*

Stable class was more likely to report having used alcohol before sexual intercourse, as compared to the *Low-Increasing* class (OR = 1.29). Relative to the *High-Decreasing* class, the *Low-Increasing* class was more likely to report unprotected sex (OR = 1.54). Finally, the *Low-Increasing* class was less likely to report drug use before sexual intercourse, as compared to the *High-Increasing* class (OR = 0.94).

Gender Differences

Results of the unconditional multi-group models with gender as the grouping variable resulted in a better fitting model for both the *Family Conflict* (BIC_{full} = 4,417.18 vs. $BIC_{multi\text{-}group}$ = 3,646.44) and *Parent Support* (BIC_{full} = 7,538.45 vs. $BIC_{multi\text{-}group}$ = 5,554.87) analyses, including higher entropy values (.89 and .90 for *Family Conflict* and *Parent Support*, respectively). Class structures between males and females largely mirrored the full sample models (Table 6), with two exceptions: for males, the *High-Increasing Family Conflict* class did not have a significant positive slope and was thus characterized as *High-Stable*, and for both males and females, the *High-Increasing Parental Support* classes did not have significant positive slopes and were thus characterized as *High-Stable*.

In general, comparisons between groups followed results from the full sample analyses with *High* or *Increasing Family Conflict* and *Low* or *Decreasing Parent Support* trajectories reporting relatively more risk behaviors at 36 months post-baseline, regardless of gender. For the multi-group results, however, we were particularly interested in gender differences within members of equivalent classes (e.g., male and female *Low-Increasing Family Conflict* classes), rather than between class differences (e.g., male *High-Decreasing* versus female *Low-Increasing*). Odds ratios from the multi-group analyses revealed seven such significant comparisons.

Family conflict

Males in the *Low-Decreasing* class were less likely to report having unprotected sex (OR = 0.45, $p < .001$), relative to females. When compared to females, males in the *Low-Decreasing* class were more likely to report drinking alcohol (OR = 1.68, $p < .001$) and using drugs (OR = 1.35, $p < .01$) prior to intercourse.

Parent support

Relative to females, males in the *High-Stable* class were less likely to report unprotected sex (OR = 0.43, $p < .001$), but more likely to report drinking alcohol before sex (OR = 1.07, $p < .001$). Males in the *Low-Increasing* class were less likely to report using drugs before sex (OR = .54, $p < .01$), as compared to females. When compared to females, males in the *High-Decreasing* class were more likely to report drug use prior to sex (OR = 2.85, $p < .05$).

DISCUSSION

Studies examining the effects of ecodevelopmental trajectories of family functioning on Black adolescent health risk behaviors are limited (Cordova, Heinze et al., 2014). Findings indicate that, in general, adolescents in high or increasing family conflict and low or decreasing parent support trajectories were at relative greater risk of sexual risk behaviors.

Although trajectories of low or decreasing family conflict and high or increasing parent support both appear routinely protective, some trajectories were not linked to sexual risk behaviors as we expected. For example, the *Low-Increasing Parent Support* class was less likely to report drug use before sexual intercourse, as compared to the *High-Increasing* class. These findings highlight the nuances and complexities of the ways in which trajectories of family functioning predict sexual risk behaviors and STI. Future research geared toward helping us to better understand whether and to what extent family functioning may be more meaningful during different stages of adolescent development would be a useful next step. A qualitative approach may be especially useful to obtain more in-depth experience about youths' perspectives on how family may influence their sexual risk behaviors and help develop new hypotheses for quantitative research.

From a developmental perspective, the family conflict and parent support trajectories identified in this study and their relation to sexual risk behaviors and STI is of high significance to the field of developmental science. The identified family conflict and support trajectories add to the empirical literature by highlighting the dynamic nature of family functioning within a developmental framework (Choe, Stoddard, & Zimmerman, 2014; Tobler & Komro, 2010). Furthermore, while researchers have reported consistently that family microsystems characterized by low levels of family conflict and high levels of family support may avert sexual risk behaviors and STI in cross-sectional or relatively short longitudinal designs (Harris et al., 2013; Lyerly & Brunner Huber, 2013; Secor-Turner, McMorris, Sieving, & Bearinger, 2013), our results support the notion that this holds true over time.

Findings yield provocative initial data with respect to the ways in which family conflict may be linked to STI among Black adolescents. Although LCGA did not produce significant results, our crosstabulation model indicates that family conflict is associated with STI over time. Specifically, the prevalence of STI at 36 months post-baseline was lowest among the *Low-Decreasing* (3.3%) family conflict class and highest among the *High-Increasing* (11.1%) and *High-Decreasing* (15.4%) classes, respectively. Similar to research on the effects of family conflict trajectories on mental health outcomes (Juang et al., 2012), it appears that irrespective of the increasing or decreasing trajectory, youth who experience initial high levels of family conflict in early adolescence may have lasting effects on STI in late adolescence.

Whereas some researchers have found that gender does not moderate the effects of family processes on adolescent problem behaviors in longitudinal designs (Goldstein, Davis-Kean, & Eccles, 2005), others have found that gender differences exist (Kan, Cheng, Landale, & McHale, 2010; Kogan, Brody, Chen, Grange, Slater, & DiClemente, 2010; Steiner, Swartzendruber, Rose, & DiClemente, 2014). Our findings indicate that the effects of parent support and family conflict on sexual risk behaviors vary as a function of gender. Similar to previous findings which suggest that family processes may influence change in sexual risk behaviors more strongly for girls relative to boys (Kan et al., 2010), our findings indicate that, irrespective of the family support or conflict trajectories, males were more likely to report having used drugs before sexual intercourse, when compared to females. Therefore, in

addition to focusing on family-level factors, interventions which emphasize sexual risk behaviors in the context of drug use among males may be helpful.

While ecodevelopmental theory postulates that adolescents are embedded in interrelated and interconnected contexts (Szapocznik & Coatsworth, 1999), researchers have focused primarily on the family microsystem (Cordova et al., 2011; Prado, Cordova et al., 2012; Prado, Huang et al., 2013). From a cultural perspective, an important future research direction is to examine how cultural context may influence youth behavior through the family. Research examining how and what family factors may mediate the effects of community- and structural-level factors (e.g., racism) on HIV/STI risk behaviors among Black youth within an ecodevelopmental framework would be useful (Magnus et al., 2010; Millett et al., 2012).

From an intervention perspective, efficacious ecodevelopmentally-informed HIV/STI programs for Black youth are limited (Cordova, Heinze et al., 2014; Murry et al., 2007). Indeed, preventive interventions guided by the ecodevelopmental framework are efficacious in preventing/reducing HIV/STI risk behaviors among Hispanic populations (Cordova et al., 2012; Prado et al., 2012; Villarruel, Loveland-Cherry, & Ronis, 2010). In one study, an ecodevelopmental-informed preventive intervention designed for Hispanics was found to have iatrogenic effects on parenting practices among Black families. Specifically, sharper decreases were observed in the experimental condition, relative to the control condition, in parental investment, family unity, and family cohesion (Muir, Schwartz, & Szapocznik, 2004). Present findings indicate that ecodevelopmental preventive interventions focusing on family conflict and parent support may help avert sexual risk behaviors among this vulnerable population.

Our findings need be interpreted in light of several study limitations. First, the study is not representative of the U.S. Black adolescent population, and therefore the findings might not generalize to the entire Black youth population. Our findings, however, may be generalizable to Black adolescents from “blue collar” families residing in the Midwest. Second, the reliance on self-report sexual risk behaviors and STI measures is a limitation. Future studies could implement the use of biomarkers in addition to self-report measures. Third, the focus on mothers’ reports of support is a study limitation. Future research should work to include both parents’ reports of support. Finally, only adolescent reports of family functioning were used in this study. Given that the family is a system, and different members of the family system may have different perspectives with regard to how well (or poorly) the family functions, applying the parent–adolescent discrepancy methodology may be useful to understanding the etiology of sexual risk behaviors and STI (Cordova, Huang et al., 2014).

Notwithstanding these limitations, this study is among the first to examine the ways in which ecodevelopmental trajectories of family conflict and parent support are linked to sexual risk behaviors and STI among a sample of Black youth. This is a critical step in developmental science and working toward a fuller understanding of the etiology of sexual risk behaviors among Black youth. Ultimately, in line with the *National HIV/AIDS Strategy for the United States* report (The White House, 2010), the goal of this program of research is to reduce and eliminate HIV/STI health disparities among this vulnerable population.

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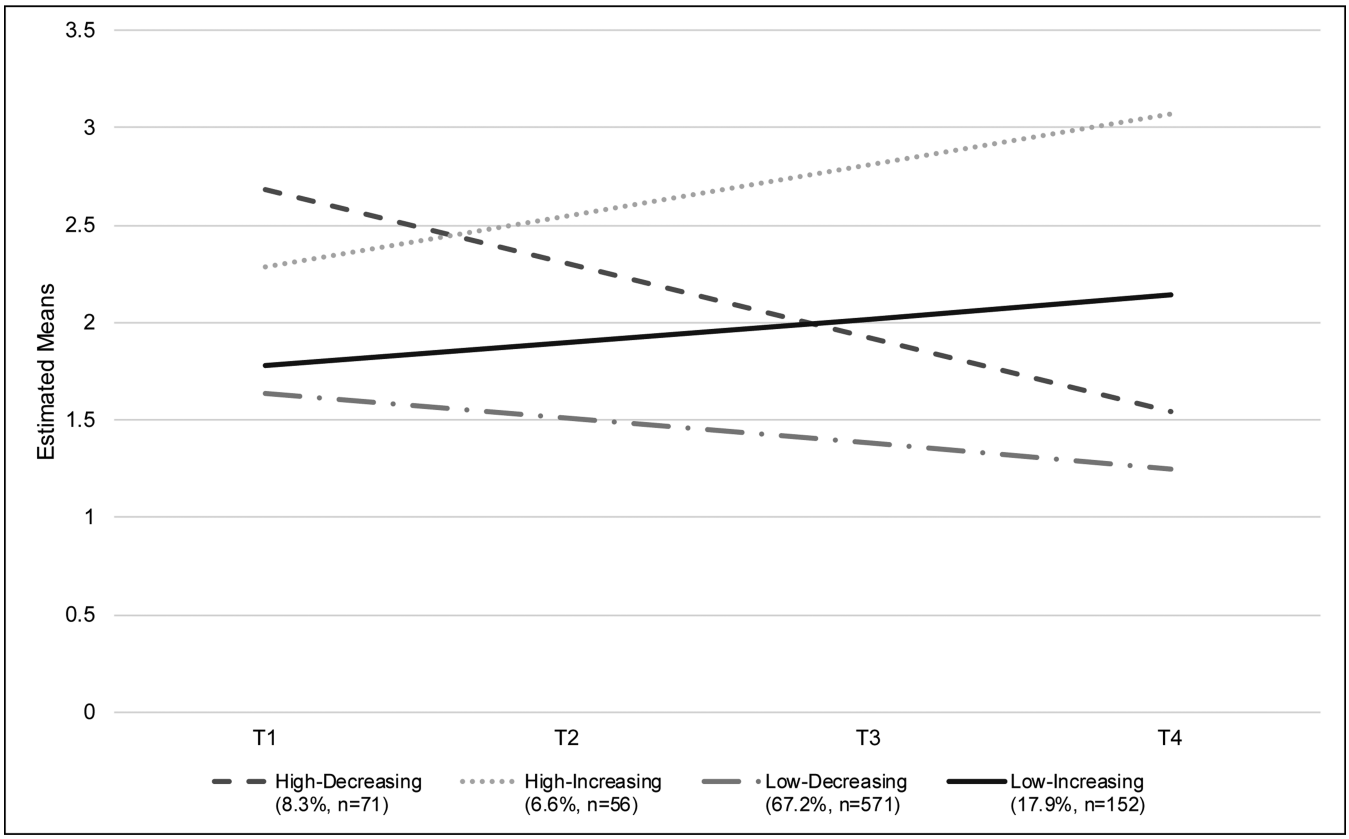

Figure 1.
Ecodevelopmental trajectories of family conflict

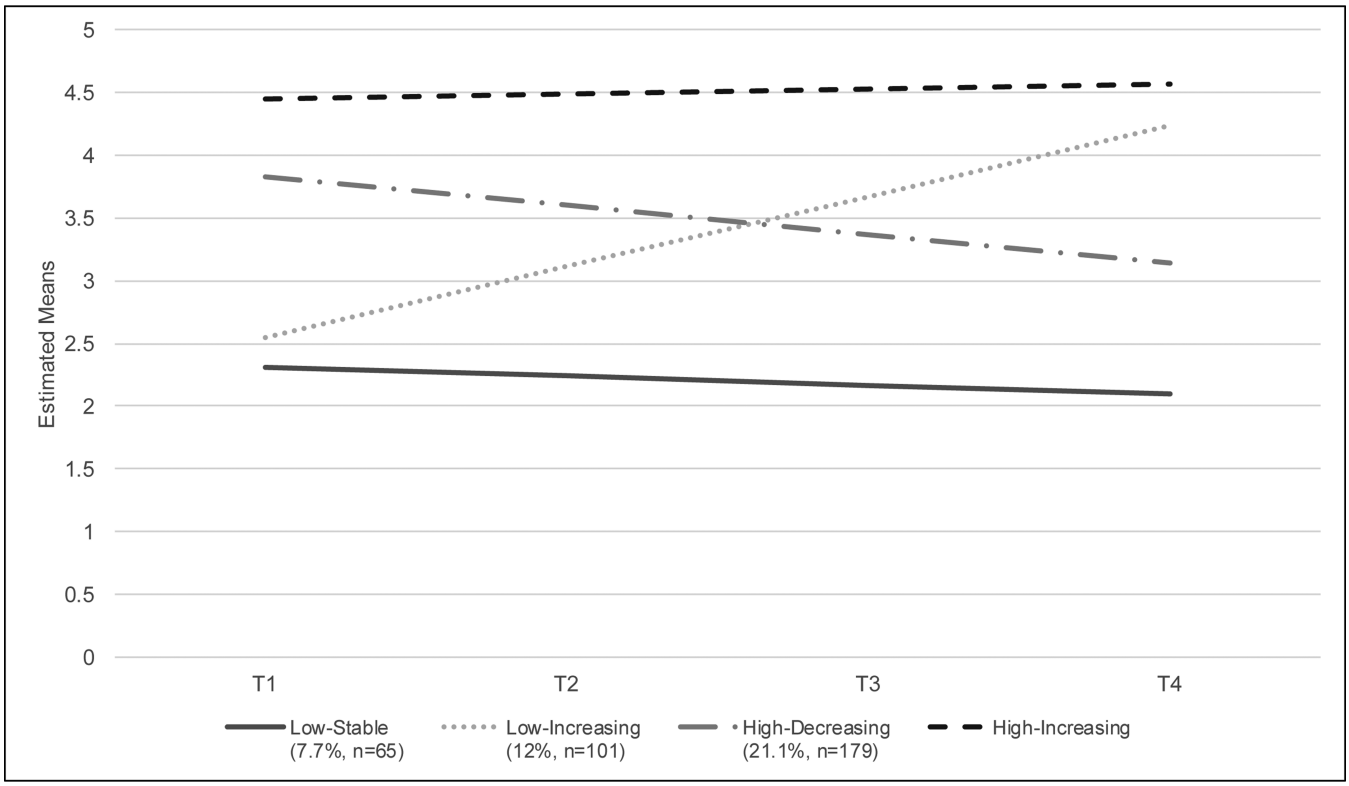

Figure 2.
Ecodevelopmental trajectories of parent support

Table 1

Reported frequencies of 36 months post-baseline outcome variables by demographic characteristics

	Past 12 Months Unprotected Sex			Past 12 Months Alcohol Use During Last Sexual Intercourse			Past 12 Months Drug Use During Last Sexual Intercourse			Past 12 Months Sexually Transmitted Infection		
	No	**Yes**	**Total**	**No**	**Yes**	**Total**	**No**	**Yes**	**Total**	**No**	**Yes**	**Total**
Gender												
Male	119 (60.1)	120 (38.1)	239	140 (42.6)	99 (53.8)	239[a]	162 (44.3)	77 (52.4)	239	232 (48.3)	7 (21.2)	239
Female	79 (39.9)	195 (61.9)	274[a]	189 (57.5)	85 (46.2)	274	204 (55.7)	70 (47.6)	274	248 (51.7)	26 (78.8)	274[a]
	$X^2(1)=23.66$, $p < .000$			$X^2(1)=6.00$, $p < .05$			$X^2(1)=2.78$, p = n.s.			$X^2(1)=9.13$, $p < .01$		
Race												
White	31 (15.7)	58 (18.4)	89	44 (13.4)	45 (24.5)	89[b]	51 (13.9)	38 (25.9)	89[1]	87 (18.1)	2 (6.1)	89
Black	159 (80.3)	245 (77.8)	404	272 (82.7)	132 (71.7)	404	298 (81.4)	106 (72.1)	404	375 (78.1)	29 (87.9)	404
Mixed	8 (4.0)	12 (3. 8)	20	13 (4. 0)	7 (3.8)	20	17 (4. 6)	3 (2.0)	20	18 (3. 8)	2 (6. 1)	20
	$X^2(2) = .65$, p = n.s.			$X^2(2) = 10.15$, $p < .01$			$X^2(2) = 11.56$, $p < .01$			$X^2(2) = 3.39$, p = n.s.		
SES[§]	−.02			−.07			−.02			−.05		

Notes.

* $p < .05$

[§]Point biserial correlation.

[a]Indicates sex with higher than expected risk.

[b]Indicates race with higher than expected risk. N=513.

Table 2

Socio-demographics

	Black	Race White	Mixed
N	681	143	26
Sex	.51	.45	.54
SES	39.81	40.31	40.56
W1 Family Conflict	3.20 (.02)	3.13(.03)	3.23(.07)
W2 Family Conflict	3.34(.02)	3.28 (.06)	3.27(.12)
W3 Family Conflict	3.42 (.02)	3.33 (.05)	3.28 (.12)
W4 Family Conflict	3.43 (.02)	3.43 (.05)	3.29 (.13)
W1 Parent Support	3.94 (.04)	3.74 (.08)	3.67 (.20)
W2 Parent Support	4.01 (.04)	3.79 (.08)	3.96 (.16)
W3 Parent Support	4.10 (.04)	3.93 (.08)	3.89 (.21)
W4 Parent Support	4.03 (.04)	3.77 (.08)	3.90(.18)

Note. SES = highest parent occupational prestige score (Range: 29.28 – 64.38).

Table 3

Family Conflict and Parent Support Trajectories and Links to Sex Initiation at 36 months Post-Baseline[a]

	Family Conflict				Parent Support			
	High Decreasing	**High Increasing**	**Low Decreasing**	**Low Increasing**	**Low Stable**	**Low Increasing**	**High Decreasing**	**High Increasing**
Parameter								
α_0	2.68 (.09)***	2.29 (.15)***	1.66 (.06)***	1.79 (.07)***	2.22 (.19)***	2.39 (.22)***	3.73 (.16)***	4.34 (.17)***
α_1	−.32 (.05)***	.31 (.06)***	−.09 (.03)**	.17 (.06)**	−.01 (.09)	.65 (.10)***	−.16 (.07)*	.11 (.06)+
ζ_0	.00	.00	.00	.00	.00	.00	.00	.00
ζ_1	.00	.00	.00	.00	.00	.00	.00	.00
$\tau\|$	−2.02	−1.99	−.92	−1.55	−1.26	−2.21	−1.49	−1.58
Shared Coefficients								
γ_0 | Sex	.02 (.03)				.01 (.07)			
γ_0 | SES	.00 (.00)				.00 (.00)			
γ_0 | Black	−.06 (.03)*				.19 (.09)*			
γ_0 | Mixed	−.08 (.06)				−.18 (.17)			
γ_1 | Sex	−.02 (.01)				−.01 (.03)			
γ_1 | SES	.00 (.00)				.00 (.00)			
γ_1 | Black	.02 (.02)				−.09 (.04)*			
γ_1 | Mixed	.06 (.04)				−.07 (.08)			
Comparison	Odds Ratio				Odds Ratio			
LD(LS) vs LI	.67**				.39+			
LD(LS) vs HD	.38+				.79*			
LD(LS) vs HI	.41+				.72**			
LI vs HD	.55				2.05+			
LI vs HI	.62				1.88*			
HD vs HI	1.13				.92**			
Number of subjects (%)	75 (8.8%)	50 (5.9%)	597 (70.2%)	128 (15.1%)	66 (7.8%)	87 (10.2%)	183 (21.5%)	514 (60.4%)

	Family Conflict				Parent Support			
	High Decreasing	**High Increasing**	**Low Decreasing**	**Low Increasing**	**Low Stable**	**Low Increasing**	**High Decreasing**	**High Increasing**
Entropy	.85				.83			
Fit Indicies								
Loglikelihood	−2471.85				−4024.25			
Bayesian (BIC)	5206.76				8187.71			

Note. Standard errors in parentheses.

$^{*}p < .05$

$^{**}p < .01$

$^{***}p < .001$.

$^{+}$p < .10.

[a]Sex Initiation analyses were conducted on the entire sample of youth.

Table 4

Ecodevelopmental Trajectories of Family Conflict and Links to Sexual Risk Behaviors and STI at 36 Months Post-Baseline[a]

	Unprotected Sex				Alcohol Use Before Last Sex			
	High Decreasing	**High Increasing**	**Low Decreasing**	**Low Increasing**	**High Decreasing**	**High Increasing**	**Low Decreasing**	**Low Increasing**
Parameter								
α_0	2.74 (.11)***	2.34 (.12)***	1.70 (.07)***	1.77 (.09)***	2.73 (.11)***	2.34 (.11)***	1.68 (.07)***	1.77 (.08)***
α_1	−.32 (.06)***	.26 (.07)***	−.07 (.04)+	.17 (.06)**	−.33 (.05)***	.24 (.06)***	−.08 (.04)*	.15 (.06)*
γ_0	.00	.00	.00	.00	.00	.00	.00	.00
γ_1	.00	.00	.00	.00	.00	.00	.00	.00
$\tau\|$	−1.42	−1.41	−.27	−.30	.47	−.19	.84	.23
Shared Coefficients								
γ_0 | Sex	−.01 (.03)				.00 (.03)			
γ_0 | SES	.00 (.00)				.00 (.00)			
γ_0 | Black	−.08 (.04)*				−.08 (.04)*			
γ_0 | Mixed	−.13 (.08)+				−.15 (.07)*			
γ_1 | Sex	−.02 (.02)				−.02 (.02)			
γ_1 | SES	−.00 (.00)				−.00 (.00)			
γ_1 | Black	.02 (.02)				.02 (.02)			
γ_1 | Mixed	.03 (.06)				.03 (.05)			
Comparison	Odds Ratio				Odds Ratio			
LD vs LI	.97*				.54**			
LD vs HD	.32*				.70**			
LD vs HI	.32*				.36**			
LI vs HD	.33+				1.28*			
LI vs HI	.33+				.66*			
HD vs HI	1.0				.51*			
Number of subjects (%)	50 (9.7%)	49 (9.6%)	335 (65.3%)	79 (15.4%)	52 (10.1%)	49 (9.6%)	329 (64.1%)	83 (16.2%)

	Unprotected Sex				Alcohol Use Before Last Sex			
	High Decreasing	**High Increasing**	**Low Decreasing**	**Low Increasing**	**High Decreasing**	**High Increasing**	**Low Decreasing**	**Low Increasing**
Entropy	.83				.83			
Fit Indicies								
Loglikelihood	−1721.02				−1716.35			
Bayesian (BIC)	3685.41				3676.06			

	Drug Use Before Last Sex				Sexually Transmitted Infection			
	High Decreasing	**High Increasing**	**Low Decreasing**	**Low Increasing**	**High Decreasing**	**High Increasing**	**Low Decreasing**	**Low Increasing**
Parameter								
α_0	2.74 (.11)***	2.34 (.12)***	1.69 (.07)***	1.78 (.09)***	2.74 (.11)***	2.32 (.12)***	1.69 (.07)***	1.76 (.09)***
α_1	−.33 (.06)***	.24 (.06)***	−.08 (.04)*	.15 (.06)*	−.30 (.07)***	.28 (.08)**	−.06 (.04)**	.18 (.06)**
ζ_0	.00	.00	.00	.00	.00	.00	.00	.00
ζ_1	.00	.00	.00	.00	.00	.00	.00	.00
$\tau\|$	.90	.45	1.17	.35	1.60	1.96	3.86	1.89
Shared Coefficients								
γ_0 | Sex	.00 (.04)				−.02 (.2)			
γ_0 | SES	.00 (.00)				.00 (.00)			
γ_0 | Black	−.09 (.04)*				−.05 (.03)			
γ_0 | Mixed	−.15 (.08)+				−.14(.06)*			
γ_1 | Sex	−.02 (.02)				−.02 (.02)			
γ_1 | SES	−.00 (.00)				00 (.00)			
γ_1 | Black	.03 (.02)				.01 (.02)			
γ_1 | Mixed	.03 (.05)				.04 (.05)			
Comparison	Odds Ratio				Odds Ratio			
LD vs LI	.44**				.14			
LD vs HD	.76*				.10			
LD vs HI	.49*				.15			
LI vs HD	1.74+				.75			

	Drug Use Before Last Sex				Sexually Transmitted Infection			
	High Decreasing	**High Increasing**	**Low Decreasing**	**Low Increasing**	**High Decreasing**	**High Increasing**	**Low Decreasing**	**Low Increasing**
LI vs HI	1.11*				1.07			
HD vs HI	.64+				1.43			
Number of subjects (%)	50 (9.7%)	49 (9.6%)	336 (65.5%)	78 (15.2%)	50 (9.7%)	47 (9.2%)	332 (64.7%)	84 (16.4%)
Entropy	.83				.84			
Fit Indicies								
Loglikelihood	−1690.04				−1499.35			
Bayesian (BIC)	3623.44				3242.06			

Note. Standard errors in parentheses.

* $p < .05$

** $p < .01$

*** $p < .001$.

+ p < .10.

[a] Only participants who reported at 36 months post baseline assessment having had sexual intercourse in the 12 months prior to the survey were included in the analyses.

Table 5

Ecodevelopmental Trajectories of Parent Support and Links to Sexual Risk Behaviors and STI at 36 Months Post-Baseline[a]

	Unprotected Sex				Alcohol Use Before Last Sex			
	Low Stable	**Low Increasing**	**High Decreasing**	**High Increasing**	**Low Stable**	**Low Increasing**	**High Decreasing**	**High Increasing**
Parameter								
α_0	2.20 (.26)***	2.31 (.37)***	3.80 (.24)***	4.41 (.21)***	2.20 (.29)***	2.37 (.35)***	3.85 (.25)***	4.41 (.25)***
α_1	−.02 (.11)	.68 (.15)***	−.14 (.12)	.14 (.08)	−.01 (.11)	.66 (.13)***	−.17 (.10)*	.15 (.08)+
ζ_0	.00	.00	.00	.00	.00	.00	.00	.00
ζ_1	.00	.00	.00	.00	.00	.00	.00	.00
$\tau\|$	−1.66	−1.31	−.88	−.14	.27	.52	.11	.85
Shared Coefficients								
γ_0 | Sex	.08 (.09)				.05 (.10)			
γ_0 | SES	.00 (.00)				.00 (.00)			
γ_0 | Black	.04 (.16)				.08 (.17)			
γ_0 | Mixed	−.26 (.22)				−.20 (.24)			
γ_1 | Sex	.03 (.03)				.02 (.03)			
γ_1 | SES	.00 (.00)				.00 (.00)			
γ_1 | Black	−.15 (.06)**				−.16 (.06)**			
γ_1 | Mixed	−.17 (.10)+				−.18 (.10)			
Comparison	Odds Ratio				Odds Ratio			
L vs LI	1.42				1.29*			
L vs HD	2.18+				1.17*			
L vs H	5.00*				1.79*			
LI vs HD	1.54*				.66*			
LI vs H	3.52*				1.39**			
HD vs H	2.29**				2.10**			
Number of subjects (%)	34 (6.6%)	60 (11.7%)	123 (23.9%)	296 (57.7%)	33 (6.4%)	66 (12.9%)	120 (23.3%)	294 (57.3%)

	Unprotected Sex				Alcohol Use Before Last Sex			
	Low Stable	**Low Increasing**	**High Decreasing**	**High Increasing**	**Low Stable**	**Low Increasing**	**High Decreasing**	**High Increasing**
Entropy	.86				.86			
Fit Indicies								
Loglikelihood	−2663.14				−2666.04			
Bayesian (BIC)	5569.65				5575.45			

	Drug Use Before Last Sex				Sexually Transmitted Infection			
	Low Stable	**Low Increasing**	**High Decreasing**	**High Increasing**	**Low Stable**	**Low Increasing**	**High Decreasing**	**High Increasing**
Parameter								
α_0	2.18 (.33)***	2.36 (.37)***	3.84 (.28)***	4.40 (.27)***	2.12 (.30)***	2.22 (.42)***	3.71 (.30)***	4.34 (.24)***
α_1	−.01 (.11)	.66 (.13)***	−.16 (.11)	.14 (.09)	−.02 (.11)	.69 (.16)**	−.14 (.13)**	.12 (.09)
ζ_0	.00	.00	.00	.00	.00	.00	.00	.00
ζ_1	.00	.00	.00	.00	.00	.00	.00	.00
τ|	.16	1.24	.42	1.18	1.8o	2.11	2.73	2.98
Shared Coefficients								
γ_0 | Sex	.05 (.12)				.05 (.10)			
γ_0 | SES	.00 (.00)				.00 (.00)			
γ_0 | Black	.08 (.23)*				.12 (.20)			
γ_0 | Mixed	−.20 (.29)				−.15 (.27)			
γ_1 | Sex	.02 (.04)				.01 (.04)			
γ_1 | SES	.00 (.00)				.00 (.00)			
γ_1 | Black	−.15 (.07)*				−.13 (.07)+			
γ_1 | Mixed	−.17 (.12)				−.15 (.11)			
Comparison	Odds Ratio				Odds Ratio			
L vs LI	2.96+				1.36			
L vs HD	1.31*				2.54			
L vs H	2.79*				3.24+			
LI vs HD	.44*				1.87			

	Drug Use Before Last Sex				Sexually Transmitted Infection			
	Low Stable	**Low Increasing**	**High Decreasing**	**High Increasing**	**Low Stable**	**Low Increasing**	**High Decreasing**	**High Increasing**
LI vs H		.94*				2.38		
HD vs H		2.14**				1.27+		
Number of subjects (%)	33 (6.4%)	65 (12.7%)	117 (22.8%)	298 (58.1%)	59(7.9%)	77(10.3%)	173(23.1%)	441(58.8%)
Entropy		.85				.85		
Fit Indicies								
Loglikelihood		−2636.80				−2455.41		
Bayesian (BIC)		5516.97				5154.20		

Note. Standard errors in parentheses.

*$p < .05$

**$p < .01$

***$p < .001$.

+p < .10.

[a]Only participants who reported at 36 months post baseline assessment having had sexual intercourse in the 12 months prior to the survey were included in the analyses.

Table 6

Unconditional Latent Class Growth Models by Gender.

	Family Conflict							
	Males				Females			
	High Decreasing	**High Stable**	**Low Decreasing**	**Low Increasing**	**Low Decreasing**	**Low Increasing**	**High Decreasing**	**High Increasing**
Means								
Intercept	2.69 (.23)***	2.30 (.22)***	1.65 (.03)***	1.66 (.08)***	1.64 (.03)***	1.89 (.09)***	2.70 (.08)***	2.44 (.24)***
Slope	−.35 (.06)***	.19 (.12)	−.12 (.01)***	.11 (.06)*	−.12 (.01)***	.15 (.06)*	−.40 (.04)***	.20 (.07)**
Number of subjects (%)	18 (3.5%)	12 (2.3%)	169 (32.9%)	40 (7.8%)	172 (33.5%)	51 (9.9%)	31 (6.0%)	20 (3.9%)
Entropy	.89							
Goodness of Fit								
Loglikelihood	−1748.34							
Bayesian (BIC)	3646.44							

	Parent Support							
	Males				Females			
	High Decreasing	**High Stable**	**Low Stable**	**Low Increasing**	**Low Stable**	**Low Increasing**	**High Decreasing**	**High Stable**
Means								
Intercept	3.93 (.12)***	4.44 (.05)***	1.50 (.28)***	2.70 (.25)***	2.07 (.23)***	2.58 (.26)***	3.54 (.19)***	4.42 (.05)***
Slope	−.27 (.08)**	.01 (.02)	.15 (.09)	.38 (.12)**	−.10 (.11)	.50 (.13)***	−.38 (.10)***	.01 (.02)
Number of subjects (%)	42 (8.2%)	160 (31.2%)	9 (1.8%)	28 (5.5%)	10 (1.9%)	57 (11.1%)	45 (8.8%)	162 (31.6%)
Entropy	.90							
Goodness of Fit								
Loglikelihood	−2702.55							
Bayesian (BIC)	5554.87							

*$p < .05$

**$p < .01$

***$p < .001$