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Adolescent Sexual Risk Taking: The Distribution of Youth Behaviors and Perceived Peer Attitudes Across Neighborhood Contexts

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Abstract

Purpose: Sexual activity is a normative part of adolescent development, yet early sexual debut and sex with multiple partners undermine health and well-being. Both structural (e.g., poverty) and social (e.g., norms) characteristics of neighborhoods shape sexual risk taking, yet scholarship remains focused on urban areas. Thus, this study explores sexually permissive attitudes and sexual risk taking across a wider expanse of neighborhood types.

Methods: Among 8,337 nonsexually active respondents in Wave I (1994–1995 [ages 11–18]) of the National Longitudinal Study of Adolescent to Adult Health (Add Health), a hierarchical linear model and a hierarchical generalized linear model were used to estimate the effect of neighborhood type and permissive sexual climate on youths' sexual debut, age at debut, and lifetime number of sexual partners by Wave III (2001–2002 [ages 18–26]), controlling for individual, familial, and peer factors.

Results: Sexual climates varied in overall permissiveness and internal consistency both across and within neighborhood types and were linked to increased sexual risk taking. Compared with youth from upper middle class white suburbs, the odds of sexual debut and the number of partners were highest among youth from rural (black and white) neighborhoods; youth from almost all other neighborhood types initiated sex earlier.

Conclusions: Early sexual debut in adolescence is a public health issue with immediate and long-term implications. Adolescence unfolds in neighborhood environments, the characteristics of which may spur youth into such risk taking. Continued scholarship on sexual risks should consider further variations in the geographic distributions of such risks to investigate more fully their consequences.

Keywords

Sexual debut; Normative climate; Neighborhoods; Urban; Rural

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Supplementary Data

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Entry into sexual activity is a developmental stepping stone in adolescents' trajectories of interpersonal and romantic relationship formation. Indeed, by age 19, many teenagers have had sexual intercourse, with sexual debut between ages 15 and 19 now generally considered "normative" [1]. Data from the National Survey of Sexual Health and Behavior (NSSHB) show that among 18- to 19-year-olds, 63% of males and 64% of females reported having intercourse [2].[1]Yet research on adolescent sexual behavior often approaches the topic from a risk framework, focusing on the *early* onset of sexual activity and activity with multiple partners, both of which have negative consequences for adolescents' well-being, including risk of sexually transmitted infection, mental health, and academic outcomes [3,4].

As described in social ecological models of adolescent development [5–7], factors that spur youth into risky sexual activity arise from multiple domains in which adolescent development is embedded and unfolds. Extensive research focuses on proximal contexts, highlighting individual (e.g., pubertal development, depression, and delinquency), familial (e.g., parent-child relationships), and peer (e.g., friends' sexual activity) risk factors [8–10]. However, youths' sexual risk taking can also be considered within the broader, more distal contexts, such as neighborhoods, in which adolescent development occurs, contexts that become increasingly important during this period of the life course [11]. In disadvantaged (i.e., socioeconomically impoverished) neighborhoods, youths have sex earlier, have more partners, and use contraceptives less often than peers in more advantaged neighborhoods [12–14]. Neighborhood-level socioeconomic characteristics, opportunity structures (e.g., access to employment, education) [15], community and institutional resources (e.g., family planning services, parks and recreation, and leisure activities), social disorganization (e.g., crime), and racial/ethnic composition are all associated with sexual debut [16,17].

In addition to structural characteristics, models prominent in the social disorganization literature have been attuned to neighborhood *processes*, illustrating how the emergence, maintenance, and transmission of social norms influence preferences for and meanings of sexual behaviors, such as the appropriate age of sexual debut or the acceptable number of sex partners [12,18,19]. In his qualitative account of black inner city youth, Anderson [20] documented a "sex code" among young male peer groups that encouraged early and frequent sexual activity as a sign of manhood and a source of respect, that is, a "player" identity. These youths' neighborhoods expose them to risk-taking peers who facilitate the transmission of attitudes and values that condone such behaviors [21]. Neighborhood peers act as role models, providing encouragement and opportunities for other youth to engage in similar behaviors [19,21,22]. Such alternative values and sources of status attainment develop in response to isolation from conventional/mainstream standards [18] and/or blocked access to legitimate opportunities for attaining adult status via economic and social advancement (e.g., employment, education, or other material success) [23].

Scholarship on concepts such as cultural frames and scripts illustrates how, even within a single neighborhood, there can exist multiple, often competing, sets of expectations for and understandings of the consequences of certain behaviors (for extended discussions

[1]Data from the 2015 Youth Risk Behavior Survey report a lower percentage of sexually active youth (e.g., 41% of high school students reported having had sex); however, this finding may be because the Youth Risk Behavior Survey is a school-based sample.

of culture, see Harding and Kirk and Papachristos [24,25]). Such “cultural heterogeneity” —combined with the increasing significance of peer acceptance and social status during adolescence [26]—means that the “player culture” can significantly influence behavior, even if it is neither the dominant standard nor the standard subscribed to by the majority of individuals. Neighborhood culture shapes the behavior by providing the values to which action is oriented, and by providing the frames through which individuals understand how a given context (i.e., their neighborhood) operates [23]. Thus, neighborhood-level sexual permissiveness affects adolescent sexual risk taking both directly (a contextual effect independent of individual-level frames) and indirectly (via its effect on individual-level frames) [23].

Other works [24,27] find that permissive sexual attitudes may be neither universal in disadvantaged groups nor limited to urban places. Although evidence suggests that black youth hold more favorable attitudes toward sexual activity [18], and Anderson’s sex code was observed among urban, black youth, such sexually permissive climates are not limited to one particular racial/ethnic group or one geography [27]. For instance, Kogan et al. [28] linked such sex codes (which they termed “reputational masculinity”) to sexual risk taking among rural, black, male youth. Adding to this complexity are the experiences of Hispanic youth, who often tread tensions between traditional cultural values (e.g., gender role socialization, virginity, and family responsibility and honor) and assimilation into dominant cultural norms [29,30].

Despite attention to the neighborhood context of adolescent sexual risk, a key limitation persists: overwhelmingly, these studies have been grounded in urban areas. Thus, much remains unknown about variations in (1) attitudes toward and (2) patterns of sexual activity across other neighborhood contexts (e.g., rural and suburban areas and Hispanic, immigrant, or mixed race neighborhoods). This is a noteworthy omission, as other neighborhood types confront many similar structural constraints observed in the urban areas that have served as the foundation for much research on neighborhoods and sexual risk. For instance, youth in rural areas are similarly isolated from the same middle-class, mainstream expectations implicated in research on urban social isolation and sexually permissive climates [16]. Rural youth also may face a lack of parental supervision and limited prosocial opportunities (e.g., recreational opportunities and school-based extracurricular activities), further exacerbating their risks of sexual activity [16]. The current study thus addresses these gaps, extending key research on neighborhood structural effects on youth sexual activity [7,15,23,31] to examine sexual risk across a range of neighborhood contexts. The study also extends research on neighborhood cultural (e.g., attitudinal) factors [18,22–24] by illustrating how permissive normative climates about sex are differentially distributed across types of neighborhoods.

Methods

The present study uses data from the National Longitudinal Study of Adolescent to Adult Health (Add Health), a nationally representative sample of adolescents in schools, grades 7–12, that began in 1994 [32]. The sampling frame included 80 representative high schools and associated middle schools, stratified by region, urbanicity, school type, size, and racial/ethnic composition. A core sample of 20,745 adolescents was randomly selected from

school rosters for in-home interviews. Respondents were surveyed 1 year (1996 [Wave II, n = 14,738]) and 6 years later (2001–2002 [Wave III, n = 15,197]). Respondents' home addresses were geocoded and contextual (e.g., census) data were appended. This research utilized secondary data and was approved by the University of Nebraska-Lincoln Institutional Review Board, and an "Agreement for the Use of Restricted-Use Data" and a "Pledge of Confidentiality" were provided to the Interuniversity Consortium for Political and Social Research at the University of Michigan where the Add Health data are stored.

The analytic sample was derived via several steps. First, the sample was limited to respondents not yet sexually active at Wave I (n = 12,421 [59.9%]); those already sexually active were excluded. One method of dealing with selection bias that may result from this exclusion is via the Heckman two-step estimator; however, since the focal dependent variable (sexual activity) is the same as the dependent variable in a selection equation (being sexually active before Wave I), this correction could introduce multicollinearity problems [33]. Further, the Heckman two-step estimator is designed for linear outcomes, and there is no analogue for discrete-choice models. Therefore, I limited the analytic sample to nonsexually active respondents. Second, only respondents participating at Wave III were retained (n = 9,323). Third, additional exclusions involved respondents missing geocodes and/or with missing data on the independent and/or dependent variables (excluded n = 986 [10.6%]). The final analytic sample size included 8,337 adolescents (nested in 1,378 census tracts [an average 6.1 persons per tract]). Compared with the analytic sample, excluded eligible cases (Wave I virgins) were less likely to live in white working class (WC) rural neighborhoods, but were more likely to be from middle class black or mixed class white urban neighborhoods, and had lived in their neighborhoods for fewer years; excluded cases were older, male, less likely to live in a two-parent household, and reported lower family socioeconomic status (but higher family support and monitoring).

Measures

Dependent Variables (3). At Wave III, respondents reported on experiences of vaginal intercourse (*sexual debut*, 1 = yes/0 = no), their age the first time they had intercourse (*age at sexual debut*; continuous [range 12–25, whole years]), and with how many partners they had engaged in intercourse (*number of partners*; categorical [0 = 0, 1 = 1–2, 2 = 3–4, 3 = 5–6, 4 = 7+] [23]).

Neighborhood-Level Independent Variables (2). *Neighborhood type* was captured via 10 dummy variables derived from a latent class analysis of 13 Wave I census tract-level indicators of neighborhood racial/ethnic composition (% Hispanic, % foreign-born, % non-Hispanic white, % non-Hispanic black, % non-Hispanic Asian/Pacific Islander/other), socioeconomic class (% poverty, high/low education, median household income), and geography (% urban, median house age, street connectivity, region). The 10 (internally homogeneous) neighborhood types that emerged are (1) upper middle class (UMC) white suburban (reference), (2) poor black urban, (3) WC mixed race urban, (4) WC white rural, (5) middle class Hispanic/Asian suburban, (6) middle class black urban, (7) poor Hispanic/immigrant urban, (8) poor white urban, (9) mixed class white urban, and (10) poor black rural. The development of this typology and extensive information about each neighborhood

type are described in detail elsewhere [34]; interested readers can see other work [35,36] for broader discussions of trends in racial/ethnic and socioeconomic residential segregation.

Permissive sexual climate was measured by the sum of responses to the Wave I questions "If you had sexual intercourse, your friends would respect you more" and "If you had sexual intercourse, you would be more attractive to the opposite sex" (responses ranged 0 = strongly disagree to 4 = strongly agree); individual responses were aggregated to the census tract level.[2]These questions were only asked of Add Health respondents aged 15 and older; thus, it is not possible to simultaneously control for individual attitudes. However, in supplemental models (described further), I examined individual- and neighborhood-level attitudes together among these older respondents.

Individual-Level Control Variables. To isolate better the effect of neighborhood type and normative climate on sexual behavior, the analyses controlled for several demographic, individual, familial, and peer characteristics, which may act as risk factors for (or protective factors against) youth sexual activity (e.g., age, gender, parent-child relationships, depression, self-control, and deviance) [5,7,15,23]. Models also controlled for the length of time respondents had lived in their neighborhood (mean = 7.5 years). See Table 1 for measurement details.

Analytic strategy

A two-level hierarchical linear model (HLM) and a hierarchical generalized linear model were used to adjust for the complex structure of the clustered data, since youth were nested within neighborhoods. A logit link function was used to model *sexual debut* (dichotomous); the *age at debut* was modeled as continuous, and the *number of partners* (categorical) was modeled via an ordered logit. The level 1 models capture the within-neighborhood variation in adolescents' sexual risk taking, whereas the level 2 models capture between-neighborhood variations. *Neighborhood type* and *permissive sexual climate* were level 2 measures; all other measures were from level 1. Analyses were executed with Stata/MP 14.2 (StataCorp, College Station, TX).[3]

Results

Sample descriptives

Table 2 presents detailed descriptive data for the analytic sample. By Wave III, 81% of youth initiated sex, doing so by age 17, on average. The modal category of sexual partners was one to two (36%), but about 16% of youth reported seven partners or more. At Wave I, youth were distributed across varying neighborhood contexts, with the largest proportions from UMC white suburban (25%) and WC white rural neighborhoods (25%) [34].[4]

[2]A total of 434 respondents were the only respondents in their given tract; these cases were assigned (at level 2) their school-level normative climate to avoid conflating contextual-level normative climate with individual attitudes.
[3]All analyses were unweighted. To properly incorporate weights in a multilevel model, weights must be available at all levels [37]. In the Add Health data, there is no weight available at the neighborhood (census tract) level.
[4]Explanation of the derivation of the neighborhood-type labels is beyond the scope of this article; interested readers should see Warner and Settersten [34].

Across all neighborhoods, the average of the sexual climate was 2.754 (on a 0–8 range); however, as Figure 1 illustrates, there was considerable variability and significant differences in climates across neighborhood types. Sexual climates were the least permissive in UMC white suburbs (mean = 2.722) and the most permissive in poor black urban neighborhoods (mean = 3.100). Neighborhood types differed in their degree of within-neighborhood variability in sexual permissiveness, as captured by the interquartile range (IQR, not shown). For instance, youth from census tracts classified as poor black rural were the most consistent/similar in their permissiveness (IQR = .282), whereas youth from poor black urban neighborhoods displayed the most heterogeneity in attitudes (IQR=.883), followed by MC black urban neighborhoods (IQR = .859). These latter findings were consistent with other works that observed such cultural heterogeneity [24] and challenged the assumption that sexual norms in poor (particularly minority) neighborhoods were universally permissive/encouraging of sexual risk taking.

Multivariate analyses

Table 3 displays the results of two-level binary and ordinal logistic regression models predicting (A) the odds of sexual debut and (B) the number of partners. Model 1 includes only neighborhood characteristics; Model 2 is the fully adjusted model. For sexual debut, compared with youth from UMC white suburbs, youth from WC white and poor black *rural* neighborhoods were more likely to have sexually debuted by Wave III. Neighborhood-level permissive sexual climate increased youths' likelihood of sexual debut, but in the full model (Model 2), this effect was explained by religiosity and deviant behavior (delinquency and violence). Regarding partner accumulation, youth from both types of rural neighborhoods reported more sexual partners; youth from MC Hispanic/Asian suburbs and WC mixed race urban neighborhoods reported fewer sexual partners, and youth exposed to permissive climates—independent of neighborhood type—reported sex with more partners.

To assess risky sexual behavior further, the age at sexual debut was examined among respondents who became sexually active by Wave III (n = 6,768). As Table 4 shows, youth from *all* neighborhood types except poor Hispanic/immigrant and mixed class white urban neighborhoods experienced sexual debut at younger ages than peers from UMC white suburban neighborhoods (Model 2). Youth in neighborhoods with more permissive sexual climates initiated sex earlier. These neighborhood patterns of early initiation persisted net of demographic, individual, family, and peer characteristics that are also associated with the timing of sexual debut. Thus, although there were few differences across neighborhoods with respect to initiating sexual activity (Table 3, Model A), there were several neighborhood-level differences in partner accumulation (Table 3, Model B) and the age at which sexual debut occurs (Table 4).

Supplemental analyses: (1) neighborhood-level versus individual-level attitudes and (2) variation by gender

Although the lack of sexual climate measures among respondents aged younger than 15 precludes testing individual- and neighborhood-level attitudes simultaneously among the full sample, I examined both measures in analysis subset to respondents aged 15 and older (see online supplement). Therefore, the number of sexual partners and the age at sexual debut

was a function of *both* neighborhood sexual climate and individual attitudes. This finding suggests that adolescents engaged in sexual risk taking in part because they were adhering to the rules of their neighborhood culture and also because the sexually permissive attitudes of the neighborhood were personally salient to them [23]. Additional supplemental analyses testing (via interaction terms) whether the effect of permissive climates operated differently across neighborhood types indicated that neighborhood climates have a consistent effect on youth sexual risk taking across all neighborhood types (not shown). Given significant gender effects (with females more likely to sexually debut and accumulating more partners), I also examined whether neighborhood types and normative climates operated differently by gender (see online supplement). There were no gender differences in these effects for odds of debut; however, females from poor black rural, Hispanic/immigrant urban, and MC black urban neighborhoods accumulated fewer partners than their male peers from those same neighborhood types (and at slightly older ages for the latter two neighborhood types).

Discussion

The current study extends scholarship on the neighborhood context of adolescent sexual risk taking by examining these risks across a wider range of neighborhoods than has been explored in research to date. Existing research on neighborhood contexts of youth sexual risk taking illustrates that neighborhood disadvantage is a key risk factor for early sexual debut and partner accumulation [12–14]. These environments can also be prime settings for the transmission of attitudes and values that encourage sexual risks. The findings from the current study are consistent with these expectations, but also illustrate more complexity in both the links between neighborhood context and sexual risk and the content and consistency of neighborhood norms about sexual risk. For instance, although normative climates in the presumably most advantaged neighborhood (UMC white suburb) were the least sexually permissive, climates in very poor neighborhoods (e.g., WC white rural, poor Hispanic/immigrant urban) were also less permissive. Further, although normative climates in poor and MC black urban neighborhoods were, on average, the most permissive, there was a considerable variation of attitudes *within* these neighborhoods.

Youth from rural neighborhoods (predominantly white and black) were the most likely to experience sexual debut and reported the most sexual partners—this finding may correspond to a lack of other prosocial opportunities, as observed in other work on rural sexual risks [16]. Youth from almost all neighborhood types debuted earlier than their UMC white peers. In additional supplemental analyses (not shown), youth from these same neighborhoods were also more likely to experience *early* sexual debut (debut before age 15). The lack of a significant debut age effect for youth from poor Hispanic/immigrant neighborhoods is surprising, given research documenting greater sexual risk taking among Hispanics [38], but may be attributable to immigrant status (often linked to less risky sexual behavior [39]) and/or may reflect the influence of more sexually conservative traditional Hispanic cultural values [29]. Overall findings show that sexually permissive attitudes and sexual risk taking in adolescence are not limited to predominantly black and/or urban neighborhoods. Rather, race/ethnicity, socioeconomic class, and geography intersect to shape youths' environments in ways that may compromise positive development and/or may create risks of sexual

activity, which can have significant negative consequences for adolescents' subsequent health and well-being.

In light of these findings, there are a few limitations to note. First, Add Health is a school-based—not a neighborhood-based—study, and since it does not contain a nationally representative sample of neighborhoods (census tracts), it is possible there are constellations of neighborhood composition not represented (and not captured) in the current analysis; the current study is not meant to be representative of all neighborhood types. Second, neighborhood type is measured at only one point in time (at Wave I) and may not capture where youth spent the majority of their childhood (although the average number of years in one's current neighborhood was 7.5) or where their sexual activity occurred. However, the current study conceptualizes early neighborhood environments as prospective "springboards" for later behavioral trajectories. Third is the exclusion of youth already sexually active at Wave I, as these youth were more likely to come from poor neighborhoods (potentially leaving a selective group of respondents in the analytic sample). Finally, although still a key data source for adolescent health behaviors, the Wave III Add Health data are now 15 years old; numerous other sources not collected in the data (e.g., the Internet and social media) now likely also shape adolescents' developmental contexts and, as such, are important areas to consider for future research.

Notwithstanding these limitations, the current study is a first step in demonstrating nuanced geographic variability in sexual attitudes and sexual risk taking. There are several avenues for future research to build upon and expand the initial patterns established here. Future research could examine mediators and/or moderators of the effects of neighborhood types [15]. Other areas for future work include investigating further neighborhood type and permissive climate effects by gender [7] (beyond the brief supplemental exploration here), exploring heterogeneity of sexual risk-taking behaviors *within* neighborhood types, and examining whether the consequences of such sexual risk taking (e.g., sexually transmitted infection transmission and pregnancy) also vary across neighborhood types. Such in-depth explorations of these "place effects"—both their character and the content of their normative climates—have implications for policy, particularly for targeting prevention and intervention efforts best tailored to address all problematic elements of neighborhoods to improve and optimize adolescent health, development, and well-being. As Coulton and Spilsbury [40] note, prevention and intervention programs make varying assumptions about which elements of neighborhoods are important for different outcomes, and often, approaches are best tailored to address one problematic element of neighborhoods, but less equipped to address others. Further, programs that show effectiveness in one type of location may not be easily transferred to others. The neighborhood-centered approach used here provides prevention practitioners additional detail on which to focus efforts—highlighting the unique (and varying) neighborhood contexts in which development unfolds, problematic attitudes are embedded, and health risk behaviors arise. Further, the current findings illustrate the significant risks occurring in contexts that are often overlooked (e.g., poor black rural and poor white urban neighborhoods).

Supplementary Material

Refer to Web version on PubMed Central for supplementary material.

Acknowledgments

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IMPLICATIONS AND CONTRIBUTION

Neighborhoods influence adolescent sexual risk taking, but the geographic distribution of such risks across an array of places has yet to be fully identified. Given the health implications of sexual risk taking, this study highlights the various neighborhood contexts of sexually permissive attitudes and risky behaviors.

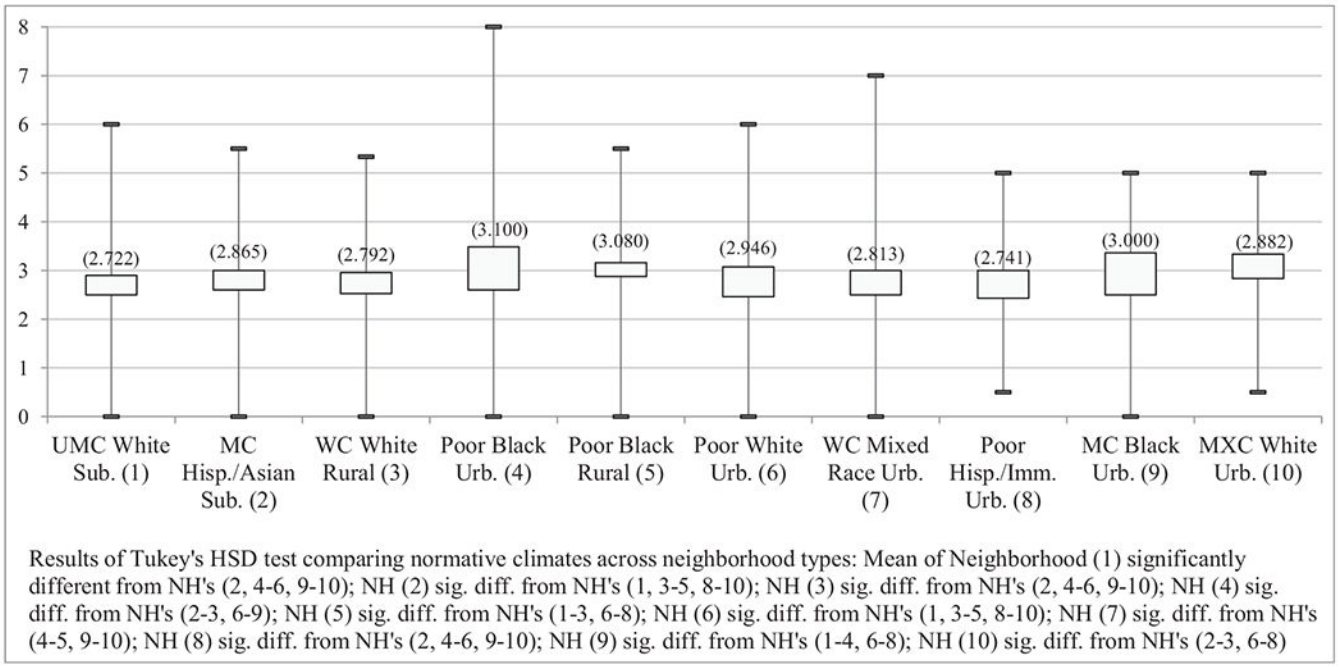

Figure 1.
Box plot of permissive sexual normative climate by neighborhood type (means).

Table 1

Measurement detail for Wave I demographic, individual, family, and peer control variables

Construct	Indicators and response options
Demographics	
Gender	Dummy variable for female (0/1)
Family structure	Dummy variables; whether *R* resides with both biological parents (1 = yes, 0 = no)
Family socioeconomic status	Combined index of parent's education and parent's occupational level (0–10)
Individual characteristics	
Relative pubertal development	"How advanced is your physical development compared to other boys [girls] your age?" (−2 = "I look younger than most" to 2 = "I look older than most" [0 = "I look the same"])
Low self-control	Mean of responses to frequency *R* has (1) "Trouble keeping your mind on what you were doing," (2) "Trouble getting your homework done," (3) "Difficulty paying attention in school," and (4) "[Feel] like you are doing everything just about right" (0 = never or rarely to 3 = most or all of the time)
Academic aspirations	"On a scale of 1–5, how likely is it that you will go to college?" (0 = low to 4 = high)
Attachment to school	Extent to which *R* (1) feels close to people at school, (2) feels like a part of the school, and (3) is happy to be in school (mean index; 0 = strongly disagree to 4 = strongly agree)
Religiosity	Mean of responses to (1) frequency attending religious services, (2) importance of religion, and (3) frequency *R* prays
Nonviolent delinquency	Dummy variable for any of 4 delinquent acts (damaged property, stolen worth >$50/<$50, breaking and entering) (0/1)
Violent perpetration	Dummy variable for any of five violent acts (e.g., threatened someone, pulled a gun/knife on someone) (0/1)
Family characteristics	
Family support	Extent to which *R* feels family (1) understands him/her, (2) pays attention to him/her, and (3) they have fun together (mean index; 0 = not at all to 4 = very much)
Parental attachment	Mean of responses to (1) "How close do you feel to your mother (father)," (2) "How much do you feel that your mother (father) cares about you?" (0 = not at all to 4 = very much, adjusted for single-parent relationships)
Parental monitoring	Whether *R*'s parents let him/her make decisions about (1) curfew and (2) which friends he/she hangs out with (mean: 1 = no, 0 = yes)
Peer characteristic	
Unstructured socializing	"During the past week, how many times did you just hang out with friends" (0 = not at all to 3 = 5 or more times)

Source: National Longitudinal Survey of Adolescent to Adult Health (Wave I [1994–1995]).

Table 2

Descriptive characteristics of analytic sample (N = 8,337)

	Proportion	SD[a]
Outcomes (Wave III)		
Sexual debut	.812	
Age at sexual debut[b]	17.360	2.163
Number of sexual partners	.188	
(0) None	.188	
(1) 1–2	.364	
(2) 3–4	.184	
(3) 5–6	.107	
(4) 7+	.157	
Independent variables (Wave I)		
Neighborhood characteristics (level 2)		
Type		
Upper middle class white suburb (ref.)	.245	
MC Hispanic/Asian suburb	.139	
WC white rural	.246	
Poor black urban	.032	
Poor black rural	.089	
Poor white urban	.061	
WC mixed race urban	.064	
Poor Hispanic/immigrant urban	.056	
MC black urban	.044	
Mixed class white urban	.025	
Permissive sexual climate	2.754	.604
Demographics (level 1)		
Gender		
Female	.543	
Age	15.090	1.674
Family socioeconomic status	4.911	2.706
Family structure		
Two married biological parents	.618	
Years in the neighborhood	7.542	5.455
Individual characteristics		
Depression	.590	.437
Relative pubertal development	.149	1.073
Low self-control	.932	.648
Attachment to school	2.832	.840
College aspirations	3.352	.990
Religiosity	2.292	1.079
Nonviolent delinquency	.284	

	Proportion	SD[a]
Violent perpetration	.235	
Family characteristics		
Family support	3.114	.642
Parental attachment	3.668	.512
Parental monitoring	.425	
Peer characteristics		
Unstructured socializing	1.902	1.001

Source: National Longitudinal Survey of Adolescent to Adult Health Wave I (1994–1995) and Wave III (2001–2002).

MC = middle class; ref = reference; SD = standard deviation; WC = working class.

[a]SDs not shown for dichotomously coded variables.

[b]Among respondents sexually active by Wave III.

Table 3

Two-level hierarchical generalized linear model of adolescent sexual debut (Model A) and number of sexual partners (Model B) by Wave III (N = 8,337)[a,b]

	Model A: Sexual debut				Model B: Number of partners			
	Model 1		Model 2		Model 1		Model 2	
	b	SE	*b*	SE	*b*	SE	*b*	SE
Intercept	1.387***	.065	1.692***	.342	—	—	—	—
Neighborhood characteristics								
Type[c]								
Upper middle class white suburban (ref.)	—	—	—	—	—	—	—	—
Middle class Hispanic/Asian suburb	−.130	.108	−.142	.111	−.248**	.079	−.205*	.081
Working class white rural	.242*	.099	.293**	.103	.148*	.070	.228**	.072
Poor black urban	.281	.188	.217	.195	.246*	.125	.237	.128
Poor black rural	.310*	.136	.482**	.142	.237*	.092	.440***	.096
Poor white urban	.135	.146	.032	.150	.119	.102	.059	.105
Working class mixed race urban	−.125	.133	−.173	.139	−.262**	.099	−.220*	.102
Poor Hispanic/immigrant urban	.026	.142	−.016	.151	−.305**	.101	−.190	.106
Middle class black urban	.107	.159	.104	.163	.133	.113	.150	.115
Mixed class white urban	.287	.216	.259	.219	.202	.144	.170	.145
Permissive sexual climate[d]	.123*	.049	.077	.051	.120**	.036	.073*	.036
Demographics								
Age			.079***	.051			.014	.013
Female			.363***	.617			.116**	.043
Two married biological parents			−.327***	.066			−.318***	.044
Family socioeconomic status			−.036**	.012			−.006	.008
Individual characteristics								
Depression			−.264**	.084			−.198***	.056
Relative pubertal development			.105***	.028			.106***	.019

	Model A: Sexual debut				Model B: Number of partners			
	Model 1		Model 2		Model 1		Model 2	
	b	SE	*b*	SE	*b*	SE	*b*	SE
Low self-control			.137*	.057			.213***	.038
Attachment to school			−.018	.039			−.040	.026
College aspirations			.003	.034			.045*	.022
Religiosity			−.181***	.031			−.162***	.020
Nonviolent delinquency			.433***	.077			.349***	.049
Violent perpetration			.475***	.082			.325***	.050
Family characteristics								
Family support			−.158*	.062			−.177***	.041
Parental attachment			−.022	.076			−.002	.048
Parental monitoring			.143	.098			.071	.066
Peer characteristics								
Unstructured socializing			.237***	.029			.171***	.020
Random effects								
Level 2 intercept (SE) (95% CI)	.111 (.039) (.056–.219)		.105 (.038) (.052–.214)		.058 (.021)(.029–.117)		.059 (.020) (.030–.115)	
−2 Log likelihood	8,008.723		7,630.009		25,277.570		24,672.380	

Source: National Longitudinal Survey of Adolescent to Adult Health Wave I (1994–1995) and Wave III (2001–2002).

CI = confidence interval; ref = reference; SE = standard error.

[a]Model A (sexual debut) specified as a logistic regression, Model B (number of partners) specified as an ordered logit.

[b]All predictors are measured from Wave I.

[c]Model also controls for years lived in neighborhood.

[d]Grand mean centered.

*p <.05;

**p < .01;

***p < .001 (two-tailed tests).

Table 4

Two-level hierarchical linear model of age at sexual debut among youth sexually active by Wave III (N = 6,768)[a]

	Model 1		Model 2	
	b	**SE**	***b***	**SE**
Intercept	17.634***	.065	14.376***	.252
Neighborhood characteristics				
Type[b]				
Upper middle class white suburban (ref.)	—	—	—	—
Middle class Hispanic/Asian suburb	−.122	.111	−.237**	.088
Working class white rural	−.401***	.098	−.261**	.076
Poor black urban	−.851***	.165	−.423**	.141
Poor black rural	−.758***	.128	−.587***	.103
Poor white urban	−.507***	.138	−.229*	.113
Working class mixed race urban	−.248	.136	−.317**	.112
Poor Hispanic/immigrant urban	.228	.139	−.020	.118
Middle class black urban	−.557***	.151	−.401**	.125
Mixed class white urban	−.079	.192	−.244	.158
Permissive sexual climate[c]	−.286***	.048	−.183***	.040
Demograpaics				
Age			.559***	.015
Female			−.030	.049
Two married biological parents			.321***	.049
Family socioeconomic status			.051***	.010
Individual characteristics				
Depression			−.011	.063
Relative pubertal development			−.099***	.021
Low self-control			−.155***	.043
Attachment to school			.022	.029

	Model 1		Model 2	
	b	**SE**	***b***	**SE**
College aspirations			.053 *	.025
Religiosity			.145 ***	.022
Nonviolent delinquency			−.044	.054
Violent perpetration			−.274 ***	.056
Family characteristics			−.274 ***	.056
Family support			.114 *	.046
Parental attachment			.008	.054
Parental monitoring			−.217 **	.076
Peer characteristics				
Unstructured socializing			−.095 ***	.023
Random effects				
Level 1 residual (SE) (95% CI)	4.403 (.079) (4.250–4.562)		3.427 (.061) (3.310–3.549)	
Level 2 intercept (SE) (95% CI)	.159 (.037) (.100–.252)		.044 (.019) (.019–.104)	
−2 Log likelihood	29,426.088		27,620.604	

Source: National Longitudinal Survey of Adolescent to Adult Health Wave I (1994–1995) and Wave III (2001–2002).

CI = confidence interval; ref = reference; SE = standard error.

[a] All predictors measured at Wave I.

[b] Model also controls for years lived in neighborhood.

[c] Grand mean centered.

* $p < .05$;

** $p < .01$;

*** $p < .001$ (two-tailed tests).