

\* WORKING PAPER - Please do not cite or quote without authors' permission \*

## **Community-Level Influences and the Sexual Behavior of Young Black South Africans**

Susan M. Lee-Rife\*

Department of Sociology and Population Studies Center  
*University of Michigan*

Sarah A. Burgard

Departments of Sociology and Epidemiology and Population Studies Center  
*University of Michigan*

4 April 2008

Total Word Count: (Including abstract, text, notes and references: 10,975)

Number of Tables: 6

Number of Figures: 0

\* Corresponding author contact information:

University of Michigan

Population Studies Center

426 Thompson Street

Ann Arbor, MI 48106

Tel: 734.424.2628

Fax: 734.763.1428

E-mail: susanml@umich.edu

**Acknowledgements:** Lee-Rife was supported by the University of Michigan's Rackham

Graduate School Spring/Summer Research Grants Program, and both authors were supported by grants from NICHD to the University of Michigan Population Studies Center. The authors would like to thank Shelley Clark, Sapna Swaroop, Michael Bader, Yasamin Kusonoki, and Barbara Anderson for valuable comments and Michael Bader and Sapna Swaroop for assistance with the construction of neighborhood characteristics scales and interpretation of the results.

**ABSTRACT:**

Most existing research concerning community influences on young people's behavior has been conducted in the United States, with its particular social and economic context. Using a large sample of young people from the Durban metropolitan area in South Africa linked to several sources of community-level information, we examine associations between concentrated disadvantage, social disorder, and social cohesion and sexual debut and unprotected sex. Using multilevel discrete time hazard models and multilevel logistic regression models, we find that net of a wide array of individual and household characteristics, young men and women in communities with relatively high levels of concentrated disadvantage have a greater hazard of sexual debut and a higher risk of unprotected sex. Sex-stratified models reveal that the impact of concentrated disadvantage is greater for females when considering sexual debut, but does not differ by sex in models predicting unprotected sex. Our results regarding social disorder and social cohesion, by contrast, show only mixed support for expectations based on US theories. Social disorder is positively associated with the hazard of sexual debut, though only for females, and social disorder is unexpectedly negatively associated with the risk of unprotected sex for males. Social cohesion reduces the risk of unprotected sex, but only for males. We discuss these results in light of previous work on contextual effects in the US and the backdrop of the HIV epidemic in South Africa.

## **INTRODUCTION**

Understanding the factors that influence sexual decision-making among young people is an important focus of research and shapes public health intervention in many societies. Recent studies have examined the ways community characteristics might shape youth sexual behavior, over and above the influence of individual and household characteristics. However, the majority of the theoretical and empirical work on community effects has been conducted in the contemporary United States, such that we do not know if existing associations apply to young people outside this particular social and historical context (Villareal and Silva 2006). In this paper, we examine associations between concentrated disadvantage, social cohesion, social disorder and sexual debut and unprotected sex among Black youth in South Africa.<sup>1</sup> A long history of institutionalized racial discrimination has led to dramatic socioeconomic disadvantage for Blacks relative to Whites and other population groups in South Africa, creating enormous disparities in health. For example, one study found that 12.3 percent of Blacks aged 15-24 are infected with HIV, compared to less than 2 percent for same age peers from the White, Coloured or Asian population groups (Shisana et al. 2005). Since about four out of five young South Africans are Black, this represents a large group at high risk. A better understanding of the relative importance of community characteristics in shaping Black youths' decisions about sexual behavior in South Africa could provide crucial information useful for interventions in high-risk settings, as well as providing an important counterpoint to findings about young people in the United States.

---

<sup>1</sup> Under the apartheid system, in place from 1948 to 1994, South Africans were officially assigned to one of four population groups: Black/African, Coloured, Asian, or White. Although apartheid ended in 1994, we use the same labels here because the legacy of population group-based policies persists; these categories still index groups' relative rankings within the social structure and often connote cultural distinctions (Kaufman and Stavrou 2002).

Previous research on well-being in early life in South Africa has focused on the enormous inequalities *between* population groups, especially between Blacks and Whites, in such outcomes as infant mortality (Bachmann, London, and Barron 1996; Burgard and Treiman 2006), growth faltering (Chaning-Pearce and Solomon 1986; Burgard 2002), stunting and wasting (Reddy et al. 2003). Poorer health outcomes for Black South Africans relative to those from other racial groups are not surprising because the vast majority of Blacks live in communities with poor infrastructure and services (Statistics South Africa 2007) and low average levels of socioeconomic resources (Treiman, McKeever and Fodor 1996).<sup>2</sup> Because racial group differences in life chances and outcomes in South Africa are relatively well-documented and the underlying socioeconomic mechanisms are reasonably clear, we shift to an understudied topic: growing inequality within the Black population. Even before the end of legalized apartheid in 1994, differences *within* the Black population were becoming increasingly important. Moreover, policies enacted since 1994 to improve the well-being of non-Whites have produced rising within-group disparities as some individuals have been able to take advantage of new opportunities while others have been unable (Adato, Carter, and May 2006; Moll 1998). Rising within-group heterogeneity in resources and community contexts may contribute to stratified profiles of risk for young Black South Africans.

Focusing on South Africa also allows us to explore whether community characteristics have consistent effects across different societal contexts. The historical and social aspects of community formation in South Africa may have led to different relationships between community conditions and young people's sexual behaviors than those that prevail in the United

---

<sup>2</sup> Whites, who account for 9 percent of the population, typically live in wealthy urban communities well-served by infrastructure and services. The conditions in communities populated by Coloured and Asian groups, who comprise 9 and 2.5 percent of the population respectively, are more varied but typically fall somewhere between the conditions of Black- and White-majority communities (Statistics South Africa 2007).

States. South African communities populated by non-whites were shaped even more by political forces—formalized in the racist apartheid regime—than by economic forces, as compared to many US communities of color (Ward 2007; Wilson 1987; 1996). The forced relocation of large numbers of Blacks to officially-designated, segregated “homeland areas” from the 1950s through the early 1980s, without regard to individual preference, ethnicity, or community structure, did much to undermine existing kin networks and community social networks (Ward 2007). The structure of the South African economy has further limited the potential for social cohesion in communities, because large numbers of non-White migrant laborers travel elsewhere in the country or the region for employment (Van Donk 2002). Their extended absences from their families and their home communities may make it difficult to establish and maintain social networks (Berry and Kasarda 1977). These conditions would seem to point toward weaker social cohesion among community members and a greater likelihood of risky sexual behavior, as is suggested by US-based research on community concentrated disadvantage. However, community disadvantage does not necessarily lead to weaker social networks in all contexts; a study of communities in Brazil showed that poorer neighborhoods had higher levels of social cohesion than wealthier neighborhoods (Villarreal and Silva 2006). Nonetheless, these Brazilian communities did not cope with the issues of migrating labor, as South African Black communities do. Moreover, violent crime—a key indicator of community social disorder—pervades South African society at levels that far exceed those in the US and presents a very real threat to both rich and poor, regardless of community of residence (Burton et al. 2003). Because of these distinctive socio-historical conditions, our study of young Black South Africans could challenge and inform expectations emerging from the largely US-centered research on community characteristics and the sexual behavior.

In addition to potential substantive differences in the relationships among community characteristics and their association with young people's behavior, the South African context may afford methodological advantages for the estimation of associations at multiple levels of analysis. Often in US-based studies, the concentration of disadvantage in particular communities make it difficult to untangle the independent contributions of household and community characteristics, because all the households there are consistently poor. By contrast, policies including residential restrictions and the large-scale relocation of non-Whites have produced dramatic spatial segregation by race in South Africa. Such policies have forced nearly all Black South Africans, the poorest as well as those with relatively more socioeconomic resources, to live in the same disadvantaged residential areas (Kaufman 1998; Treiman et al. 1996). This means that we can examine the impact of a particular community's characteristics among young residents with differing levels of household socioeconomic and other resources.

Finally, the South African context provides conditions for gender socialization that may vary from those in the United States and other societies where community effects have been studied. Young men and women engage in sexual behavior at different levels in most societies; in South Africa, 50 percent of young Black males had ever had sex compared to only 34 percent of young females (Reddy et al. 2003). While a wide range of factors undoubtedly contribute to these differences, gender differences in the influence of community characteristics may be part of the explanation. Many studies of young people in the US have found that gender moderates the association between community characteristics and sexual behavior (Browning et al. 2005; Cleveland and Gilson 2004; Cubbin et al. 2005; Ramirez-Valles et al. 2002). In South Africa, parents may be especially motivated to restrict girls' exposure to the community because of the high levels of violent crime and the high prevalence of coerced sex (Burton et al. 2003; Republic

of South Africa 1998). At the same time, adolescent childbearing is frequently supported and/or explicitly encouraged by young women's parents, grandparents, and sexual partners (Preston-Whyte et al. 1990; Richter 1996; Wood, Maepa and Jewkes 1997), making the South African context an interesting one for studying the intersection of community and household effects on sexual behavior.

In this study we examine the independent and joint effects of three community characteristics: concentrated disadvantage, social disorder, and social cohesion, to examine the structural characteristics prevailing and processes occurring in South African communities that influence Black young peoples' sexual behavior. We consider two outcomes with particular relevance to the transition to adulthood and the risk of acquiring HIV – sexual debut and unprotected sex – among individuals at high risk in the current epidemic. We also assess whether there are gender differences in associations between community conditions and sexual behavior, and examine the influences of key individual- and household-level characteristics. The study is unique not only because we focus on South Africa, but also because we make use of a community survey of local residents and the South African Census to obtain independent measures of two community characteristics, and link these data to a survey of young people in a regionally-representative sample. Our findings both inform planning for intervention in this high risk population and provide an important counterpoint to the largely US-focused theoretical and empirical discussion of community effects on adolescent behavior and well-being.

## **BACKGROUND AND SIGNIFICANCE**

### ***Why Does Community Context Matter for Youth Sexual Behaviors?***

Social scientists have focused on the ways that community characteristics influence young people with respect to many behaviors, including sexual decision-making. Concentrated poverty or disadvantage is a commonly hypothesized explanation for community-level variations in individual behavior. Scholars including Wilson (1987, 1996) and Massey and Denton (1993) have argued that because of racism and other social and economic processes, low-income racial/ethnic minorities in the US have been concentrated in communities that are both spatially and socially isolated from mainstream society. As a result of this isolation, they argue, young people in such communities grow up in environments of concentrated disadvantage and social disorganization. In addition to a lack of resources for building social and human capital (Jencks and Mayer 1990; Coleman 1988; Kauppinen 2006; Sampson, Raudenbush, and Earls 1997), young residents in communities where disadvantage is concentrated come in regular contact with individuals who work in low-wage jobs or receive public assistance, have children during adolescence or outside of marriage, and engage in other behaviors that mainstream society considers problematic; they lack role models who demonstrate the advantages of staying in school, deferring parenthood, getting a job, or refraining from risk-taking (Jencks and Mayer 1990; Leventhal and Brooks-Gunn 2000). Because of the structural unavailability of educational and employment opportunities, young residents may seek “alternative expressions of self-worth,” which may manifest as risky behavior involving sex, drugs, or gangs (Petersen et al. 2004: 295). According to theories of concentrated disadvantage, so-called “problem” behaviors which perhaps begin as temporary adaptations to poverty, limited opportunities, and stress become both widespread and normative in such communities and exert a strong socializing influence on young residents (Duncan and Raudenbush 2001).



Community concentrated disadvantage has been linked to sexual behavior among young people in the United States, but results have not been unequivocal. For example, while some studies have found that concentrated poverty and disadvantage are associated with an increased risk of sexual activity and its earlier onset (Browning et al. 2004, 2005; Cubbin et al. 2005; Upchurch et al. 1999) as well as an increased risk of unprotected sex (Baumer and South 2001; Mosher and McNally 1991), others have found no association with early sexual activity at all (Baumer and South 2001; Billy et al. 1994). Moreover, in South Africa some of the “problematic” or non-normative behaviors central to theories of concentrated disadvantage may not be as relevant as they are in the US. Adolescent childbearing is extremely common in South Africa, with more than one-third of Black females having a child by age 20 (Republic of South Africa 1995). In addition, with the unemployment rate for Black South Africans estimated at 31 percent (Banerjee, Galiani, Levinsohn, McLaren, and Woolard 2007), unemployment can hardly be considered non-normative, even if it is not encouraged or desired. The prevalence of these conditions across South Africa’s Black communities may diminish their impact on sexual behavior, or at least may reduce the likelihood of observing large differences across neighborhoods in their consequences.

More recently, research on community effects has examined the ways that structural factors like concentrated disadvantage may manifest in detrimental social processes by leading to increased levels of community social disorder, manifesting in crime, violence, and the presence of gangs. Such conditions may both indicate and influence the nature of social relations among community residents and the potential for the informal social control of youth. Social disorder may encourage residents to withdraw into their homes, reducing the collective social control over undesirable activities in the community and resulting in fewer effective sanctions and social

controls on youth behavior (Massey and Denton 1993; Upchurch et al. 1999). Social disorder may also cause or increase psychological distress, influencing behavior by increasing residents' sense of powerlessness (Wei et al. 2005) or hopelessness about the future (Hill, Ross, and Angel 2005), and by encouraging risky behaviors—sexual and otherwise—as methods of coping. Upchurch and colleagues (1999) showed that earlier sexual debut was associated with social disorder in the United States, measured with an index of perceived ambient hazards, including perceived personal threat (e.g., drive-by shootings), neighborhood physical deterioration, and the presence of alternative youth culture. South African communities face very high levels of crime and violence (Burton et al. 2003), making social disorder a potentially large influence on young people. However, due to the greater prevalence and lower geographical concentration of social disorder in the South African context, it may not have the same relationship with young people's behaviors or may be less important in explaining community-level variation in their behavior.

In addition to examining social disorder as a risk factor arising from community structural disadvantage, recent research has focused on community capacity for informal social control. A key prerequisite of this capacity for informal social control is social cohesion, or the extent to which community residents know and trust each other and share expectations for young people's behavior (Sampson et al. 1997). Social cohesion will influence residents' active socialization of young people and willingness to intervene if shared expectations are not met. Many scholars have used measures of racial/ethnic homogeneity, residential stability, and home ownership as proxies for shared values and social ties within the community (Jencks and Mayer 1990; Leventhal and Brooks-Gunn 2000; Sampson and Lauritsen 1993; Shaw and McKay 1942), while others have used more direct measures that tap the shared sense of trust and willingness to intervene that characterizes social cohesion—conceptualized as collective efficacy by Sampson

and colleagues (Sampson et al. 1997). The empirical work on social cohesion and a conceptually-similar community characteristic, collective efficacy, has produced mixed results. For example, one study found that residential instability increased the likelihood of sexual debut (Brewster, Billy, and Grady 1993), but other studies found no association (Browning et al. 2004; 2005; Cubbin et al. 2005). Furthermore, several studies have found a positive association between ethnic heterogeneity and the risk of sexual debut (Brewster et al. 1993; Browning and Olinger-Wilbon 2003; Cubbin et al. 2005), while another did not find a significant association with the age of debut (Ramirez-Valles et al. 2002). Browning and colleagues (2004) tested the link between collective efficacy and sexual debut directly—combining measures of perceived social cohesion with intergenerational closure among neighborhood parents—and found that it delayed sexual debut (Browning et al. 2004); another study found that social cohesion is negatively associated with gonorrhea prevalence among young adults, another indicator of sexual health (Ellen, Jennings, Chung, and Taylor 2004). Social cohesion and its influence on young people’s sexual behavior may be particularly pertinent in South Africa; most notably, the streets in mostly Black communities in South Africa are often full of activity. High unemployment rates leave many adults unoccupied (Banerjee et al. 2006) and small houses and large families make socializing indoors difficult or undesirable. As a result, community residents may find it much easier to interact with and monitor young people going into and out of private homes and in search of privacy in vacant lots or parks than they might in quieter, more isolated neighborhoods. However, the high levels of long-term and long-distance labor migration discussed above may cause significant disruption to the social fabric of young peoples’ home communities. As Berry and Kasarda (1977) note, social networks—and thus, social cohesion—are difficult to establish and maintain when residents move frequently into and out of the community.

### *Why Does Gender Matter?*

The literature on gender socialization suggests a number of pathways through which gender differences in sexual behavior could arise but it is less clear how gender may moderate community effects. Several studies have found that girls are supervised more carefully than boys are (Black, Ricardo, and Stanton 1997; Davis and Davis 1989; Li, Feigelman, and Stanton 2000; Svensson 2003; though see Browning et al. 2005 for a null finding), starting in childhood but often intensifying during adolescence and young adulthood when gender and reproductive roles become more salient. This difference in supervision may stem from the perception (or reality) that girls are more vulnerable to crime or from the fact that the potentially negative consequences of sexual activity—unintended pregnancy, sexual victimization, and reduced marriage prospects—are generally borne more by girls than by boys. Consequently, parents may restrict girls' movement more than they do boys', and girls may be less influenced by community characteristics. On the other hand, the heightened regulation of girls' sexual behavior in many societies (Mensch, Bruce, and Greene 1998; Nathanson 1993) could mean that the forces of community informal social control are brought more to bear on girls than on boys, resulting in *greater* community influences on girls' behavior. Alternatively, some research suggests that boys are perceived as a greater threat to the collectivity and in need of more vigilant regulation than girls are (Gibbs 1988), and thus may receive the brunt of community social control efforts. Some US-based studies have found that concentrated poverty reduces boys' age of sexual debut but not girls' (Ramirez-Valles et al. 2002). However, other studies have found that collective efficacy delays sexual debut similarly for young men and women (Browning et al. 2005). We build upon these US-based studies by turning to young men's and women's community experiences in

South Africa, where socialization and community processes may intersect differently to affect sexual behavior.

### **Sexual Debut and Unprotected Sex in South Africa**

The HIV epidemic is an important backdrop for young people's sexual activity in South Africa. As noted above, the prevalence of HIV among young Blacks is 12.3 percent (Shisana et al. 2005); many suspect that the rate of infection is increasing (Gilbert and Walker 2002; UNAIDS 2000) and younger cohorts are bearing the brunt of new infections (UNAIDS 1999). In such a context, the transition to sexual activity is a marker of significantly increased risk of infection and sexual contact without a condom increases this risk even further.

Although an especially important factor in contemporary South Africa, HIV infection is not the only risk posed by sexual activity in adolescence and young adulthood. While sexual activity among adolescents and young adults is not unambiguously risky, individuals who are relatively young at sexual debut may accumulate more partners and increase their risk of sexually transmitted infections (which may also increase vulnerability to HIV infection), sexual coercion, and poor mental health outcomes (Alan Guttmacher Institute 1996; Meier 2007; Resnick et al. 1997; Tubman, Windle, and Windle 1996). The two sexual behaviors we address in this paper—sexual debut and condom non-use—may increase young people's risk of HIV infection and other negative consequences and may add challenges to the transition to adulthood.

Decades of research has examined the predictors of sexual debut and condom non-use among adolescents and young adults. In addition to the community-level factors discussed above, this work has also established strong associations between sexual debut and condom non-use with individual- and household-level characteristics, including school enrollment,

participation in sports or community organizations, household socioeconomic status, household shocks, family structure, (Billy, Brewster, Grady, and Moore 1994; Brewster 1994; Browning et al. 2004; Dinkelman, Lam, and Leibbrandt 2007; Flewelling and Baumann 1990; Hallman 2004; Kaufman et al. 2004; Lauritsen 1994; Pettifor et al. 2004; Thomas, Farrell, and Barnes 1996; Wu and Thomson 2001). We consider the potential influence of these important individual- and household-level factors in our analysis as well.

## **Summary**

Theories of community effects developed to describe conditions in the United States suggest that concentrated disadvantage and social disorder may increase risky sexual behavior, while social cohesion could protect young people from early sexual debut or other risky behaviors. Considering the community effects literature and sociohistorical conditions that have shaped South African communities, we arrive at several research questions that motivate this study. First, are concentrated disadvantage and social disorder associated with earlier sexual debut and greater risk of unprotected sex among young Black South Africans, net of individual and household-level characteristics? Does social cohesion protect against early sexual debut and unprotected sex in South Africa? Finally, do these relationships vary by gender? In the sections that follow we describe the data and analytic strategy used to explore these questions, examine results, and discuss our conclusions in light of HIV/AIDS and other dimensions of the South African context, as well as reflecting on the implications for theory about community effects.

## **DATA AND METHODS**

### **Data Sources**

We use two data sources in this analysis: the “Transitions to Adulthood in the Context of HIV/AIDS” study (hereafter, the Transitions study) conducted in the Durban metropolitan area of KwaZulu-Natal, South Africa between 1999 and 2001 (Rutenberg et al. 2001), and the 10 percent sample of the 1996 South African Census (Statistics South Africa 1996). KwaZulu-Natal is the most populous province in South Africa, and about half the residents live in urban areas (as classified by the South African Census Bureau). Blacks comprise the vast majority of the population (82%), with Asians making up another 9 percent, and Whites and Coloureds together comprising the remaining 9 percent. A stratified, multi-stage cluster sampling method was used in sample selection, with enumeration areas from the 1996 census serving as the primary sampling units (see Rutenberg et al. 2001 for more on study design). Interviews were first conducted in 1999 with all willing young people aged 14–24 years within each enumeration area and with the head of the young person’s household. These respondents were reinterviewed in 2001, as were a new group of young people from the same sampling frame. We use the larger sample in the 2001 study wave to obtain our main analytic sample.

The Transitions survey also collected information about community characteristics with a street intercept interview module in 113 of the 118 sampled enumeration areas.<sup>3</sup> For this study, a community is defined as an enumeration area, the smallest available administrative unit at which community data are typically collected in South Africa. These data were collected six months after the 1999 survey, and we use them to construct a measure of social disorder (described below). Street intercept interviews were conducted with as many as 40 residents in each enumeration area, asking about their experiences with crime and perceptions of safety in the community. We also use enumeration area-level data from a 10 percent sample of the 1996

---

<sup>3</sup> Five of the 118 enumeration areas were excluded from data collection because of safety concerns or because local authorities would not permit access to the area (Rutenberg et al. 2001).

South African Census to construct a measure of community-level concentrated disadvantage (described below). Census data provide a more representative sample of the conditions at the enumeration area level than the Transitions data, which necessarily include a relatively small sample of respondents per enumeration area, though only certain structural characteristics are available from the Census.<sup>4</sup>

We use two analytic samples: for analyses of the time to sexual debut, the sample includes 2,743 Black respondents aged 14 to 24 years with complete information on household and community-level characteristics, while for analyses of unprotected sex, the sample includes those 1,697 respondents who reported ever having experienced penetrative sexual intercourse. We omit from the analytic sample respondents who were missing household-level information because an interview had not been completed (N=194), who lived in the five enumeration areas where intercept interviews were not conducted (N=200) or in the two enumeration areas for which Census data were unavailable (N=49). The final samples used in multivariate analyses are nested within 79-91 enumeration areas, each with an average of 30 young people (range: 1 to 95). About 80 percent of communities have more than five respondents in the main analytic sample.

## **Measures**

### *Sexual Behaviors*

Dependent variables are based on respondents' self-reported sexual behavior. *Sexual debut* is measured in years to first penetrative sexual intercourse, with respondents entering risk at 10 years of age. Respondents were asked if they had experienced penetrative sexual intercourse, and those who reported affirmatively were asked their age at first sex. Thus, the

---

<sup>4</sup> The 2001 South African census data were not publicly available at the enumeration area-level. Moreover, the 1996 census data are more likely to capture the conditions experienced by the young people in our sample during their childhoods and earlier adolescence, when community characteristics may begin to exert their effects.



sexual debut variable measures the number of years from age 10 to the year of first sex or age at interview in 2001 if the respondent had not yet had sex. Among the subsample of respondents who have experienced sexual intercourse, we also assess whether the respondent engaged in *unprotected sex*, coded so that 0 = *used a condom during last sex during the previous 12 months*, and 1 = *did not use a condom during last sex during the previous 12 months*.

### *Community Level Variables*

We created an index of *social disorder* from enumeration area residents' responses from the street intercept interview about perceptions of community safety and experience with criminal activity and other dangerous activities, using a three-level logistic regression item response model and HLM 6.0 software (Raudenbush and Sampson 1999).<sup>5</sup> Specifically, the interviewed residents were asked whether they felt unsafe walking around their community during the day and at night and whether they felt unsafe in any area of their community. They were also asked whether they or any of their relatives living in the community had experienced a range of crimes during the previous 12 months, including burglary, robbery, assault, vehicular crime, or murder or attempted murder, whether they were aware of any gang activity in the area, and whether they had witnessed a fight in the community during the previous 12 months. At Level 1 of the model, an item-response model adjusts individual-level latent social disorder scores for missing data on any of the eleven items asked of each respondent in the intercept interview, and takes into account the varying likelihoods of experiencing a given event, such as feeling unsafe walking around the community at night versus reporting an assault on them. The level one model (within respondents) is constructed as follows:

---

<sup>5</sup> Item response models were developed to assess the quality of test items (Rasch 1980), but have also been used to assess ecological settings such as communities and schools (Browning and Cagney 2003; Raudenbush and Sampson 1999).

$$Y_{ijk} = \pi_{jk} + \sum_{p=1}^{10} \alpha_p D_{pijk} + e_{ijk}, \quad (1)$$

where  $Y_{ijk}$  is the dichotomous response to item  $i$  for person  $j$  in enumeration area  $k$ ,  $\pi_{jk}$  is the respondent-specific intercept, and  $D_{pijk}$  is a dummy variable with a value of 1 if response  $i$  for person  $j$  in enumeration area  $k$  is for item  $p$  in the social disorder scale and 0 otherwise. Only ten dummy variables are included in the model, with the reference item value set to zero, so  $\alpha_p$  represents the difference in log-odds of a positive response between item  $p$  and the reference item. At level two, estimated across the average of 30 respondents per enumeration area, we model as follows:

$$\pi_{jk} = \beta_{0k} + r_{ij}, \quad r_{ij} \sim N(0, \sigma^2) \quad (2)$$

where  $\beta_{0k}$  represents the enumeration area-specific intercept and  $r_{ij}$  is an independently and normally-distributed error term with mean zero and variance  $\sigma^2$ . At level three, the enumeration area-specific intercepts can be modeled:

$$\beta_{0k} = \gamma_{00} + u_{0k}, \quad u_{0k} \sim N(0, \tau_{00}) \quad (3)$$

where  $\gamma_{00}$  is the sample-wide grand mean and  $u_{0k}$  is an enumeration area-level random effect. To obtain the final social disorder scale score for each enumeration area, we add the enumeration area-specific empirical Bayes residual (from level three) to the grand mean value  $\gamma_{00}$ . The social disorder scale ranges from -2.4 to 4.2. Also using this item-response model strategy, an index of *collective efficacy* was created using variables aggregated from young peoples' responses to two questions on the individual Transitions questionnaire: "People in my neighborhood trust one another" and "The adults in my neighborhood/community will help other families when they are

in trouble.” These items are scored so that 1 = agree and 0 = disagree. Values for the index range from 0.25 to 2.7.

Data from the 1996 South African Census were used to construct an indicator of community concentrated disadvantage, based on the proportion of households in the enumeration area with electricity for cooking, heating, and/or lighting, regular refuse collection, flush toilets, and/or piped water at the dwelling, the percentage of enumeration area residents aged 25 and older who have completed secondary schooling, and the percentage of those aged 25 and older who were employed at the time of the Census. Dichotomous variables were created to indicate enumeration areas in the lowest 25 percent of the distribution on electricity for cooking, heating and/or lighting, piped water, completion of secondary schooling and employment, and in the lowest 33 percent of the distribution for regular refuse collection and flush toilets. These dichotomous indicators were then summed to denote the number of dimensions on which the enumeration area was disadvantaged relative to all enumeration areas in the sample. Higher scores indicate greater concentrated disadvantage. Values for the neighborhood concentrated disadvantage index range from 0 to 8.<sup>6</sup>

#### *Individual- and Household-Level Predictors*

We include a range of predictors to assess the variation in behavior attributable to the characteristics of the young person and his/her family, versus that attributable to community characteristics. The respondent’s *age* in years (ranging from 13-24) is included because the extent to which the community influences individual behavior may vary by age (Leventhal and

---

<sup>6</sup> We also explored using other commonly-included community characteristics, including percentage of Black residents and level of racial diversity among the residents of the enumeration area, and the proportion of households with a member absent/present due to labor migration, but these indicators were not significantly associated with any of the outcomes studied here. In addition, the vast majority of young Black South Africans live in communities where the overwhelming majority of residents are also Black. In the main sample, for example, less than 7 percent of respondents lived in enumeration areas inhabited by less than 90 percent Black residents, according to the 1996 Census. High levels of missing Census data prevented us from including measures of residential instability or household income.

Brooks-Gunn 2000), the probability of sexual debut rises with age (Reddy et al. 2003), and because the factors influencing decisionmaking about sexual behavior may also vary by age (Gage 1998]. Institutions like church and school may shape young peoples' sexual behaviors. The *importance of religion* to respondents is coded so that 0 = not at all important, 1 = somewhat important, and 2 = very important. *Not being currently enrolled in school* could influence a young person's quantity of free or unsupervised time, particularly at younger ages; for this study 0 = *currently enrolled* and 1 = *not currently enrolled*. We also include measures of the respondent's connectedness to the local community, with indicators of the number of residential moves in the respondent's lifetime and current participation in community organizations. Moving from one community to another could fracture important social ties or increase stress levels, with an attendant increase in sexual behavior. Conversely, moving could remove a young person from the negative influences of a particular setting, which could reduce sexual behavior (DeWit 1998; Swanson and Schneider 1999). The *number of moves* ranges from 0 to 13. We also include the *number of community organizations* in which the respondent participates, ranging from 0 to 8 organizations.<sup>7</sup> Affiliation with organizations such as religious groups, sports teams, or study groups may help to buffer the impact of stressful, negative influences (Resnick et al. 1997) and reduce risky behaviors (Brooks-Gunn et al. 1993; Resnick et al. 1997).

The home environment and available resources also influence young people's sexual behavior. *Household assets* are measured with an index of household amenities, including materials used to construct the roof and walls of the home, the type of toilet facilities and water supply, access to electricity, and ownership of a telephone. We created a scale of these items, with values for each item standardized and summed; the Cronbach's alpha value for this index is

---

<sup>7</sup> Because the continuous variables for number of moves and number of community organizations were highly skewed, we tested both a logged version and a categorical version of these variables. Results were substantively unchanged so we present the continuous versions here.

0.79, and the range is -2.05 (lowest assets) to 0.995 (highest assets). We include a measure indicating the presence of *fewer than two adults* (persons 25 years or older) residing in the household at the time of the survey, as such individuals could provide support and supervision for the respondent. Previous research in the US has found family structure to be associated with a wide range of sexual behaviors (Wu and Thomson 2001), and one study found a significant association with sexual onset (Browning et al. 2004). We also include the number of *negative household events* experienced in the previous two years, coded as an index ranging from 0 to 5 events. Events included a death or serious illness in the family, the loss of a family member's job, the loss of a remittance or grant, divorce or abandonment of the household, or a theft, fire, or destruction of household property.

### Analytic Strategy

We use two-level hierarchical logistic regression models and multilevel discrete time hazard models with HLM 6.0 software to accommodate the structure of these data, with young people nested within enumeration areas, our measure of communities. The level one logistic model for reporting unprotected sex (across young people within communities) is constructed as follows:

$$\eta_{ij} = \beta_{0j} + \beta_{Male\ j}(Male)_{ij} + \beta_{2j}X_{2ij} + \dots + \beta_{pj}X_{pij} \quad (4)$$

where  $\eta_{ij}$  is the log-odds of “success,” here indicating that the respondent reports having unprotected sex,  $\beta_{0j}$  is the expected value of the behavior when all covariates are equal to zero,  $Male_{ij}$  is the dichotomous variable distinguishing respondent  $i$  from community  $j$  as male or female,  $\beta_{Male\ j}$  is the estimated difference between male and female respondents in the behavior

in community  $j$ ,  $X_{2ij}$  indicates the value of predictor variable two for respondent  $i$  from community  $j$ , and  $\beta_{2j}$  represents the effect of predictor variable two for community  $j$ . The level two model (across communities) can be constructed as follows:

$$\beta_{0j} = \gamma_{00} + \gamma_{01}W_{1j} + \gamma_{02}W_{2j} + \gamma_{03}W_{3j} + \gamma_{04}W_{4j} + u_{0j}, \quad u_{0j} \sim N(0, \tau_{00}) \quad (5)$$

$$\beta_{Male\ j} = \gamma_{10} + \gamma_{11}W_{1j} + \gamma_{12}W_{2j} + \gamma_{13}W_{3j} + \gamma_{14}W_{4j} \quad (6)$$

where  $\gamma_{00}$  is the conditional average log-odds of the behavior of interest across communities,  $u_{0j}$  represents the deviation of average respondent behavior in community  $j$  from the average across communities, and  $\tau_{00}$  is the variance between communities in the community-average log-odds of the behavior. The  $W_{1j}$  and  $\gamma_{01}$  terms represent the value of, and effect of, the first community characteristic on a respondent's behavior in community  $j$ , respectively. In models including cross-level interaction terms, equation (6) for  $\beta_{Male\ j}$  models the estimated difference in behavior between males and females as a function of community characteristics. A statistically significant value for  $\gamma_{11}$ ,  $\gamma_{12}$ ,  $\gamma_{13}$ , or  $\gamma_{14}$  would indicate that the community characteristic is differently associated with behavior for males and females. In models without cross-level effects, equation 6 is not estimated. Using the same general strategy, a two level discrete time hazard model is used to estimate models of the hazard of sexual debut. In these models, the individual level is based on person-year observations, one for each year during which respondent is at risk of sexual debut. Indicators of these person-years of duration since entering risk (and duration squared) are included to model the hazard of sexual initiation. In all relevant models for both outcomes, respondent's age, household assets, and all community characteristics are centered relative to the sample-wide grand mean to aid in interpretation of coefficients.

## RESULTS

### Descriptive Results

Table 1 presents descriptive information for all measures separately by sex for individual- and household-level characteristics. All individual- and household-level figures are weighted, while community-level figures and column totals are unweighted. About 59 percent of females and 67 percent of males in this sample report ever having had sex, and among those who have had sex, age at sexual debut was 16.4 years for females and 15.3 years for males. These variables are used to construct our measure of sexual debut and are presented here for descriptive purposes. About 45 percent of females versus only 30 percent of males reported not using a condom at last sex in the last year. All sex differences in outcomes are statistically significant according to t-tests or Chi-square tests for difference. Sample members were about 18 years of age on average, rate the importance of religion as nearest to very important (1.8), and have moved an average of one time, with no sex differences on these measures. Females are significantly more likely to report not being currently enrolled in school (38%) than males (31%) and belong to significantly fewer community groups (1.0 and 1.7, respectively). Males live in households with significantly greater assets than females (-0.25 versus -0.28, respectively), but there is no sex difference in likelihood of living with fewer than two adults in the household (about 1 in 4 respondents) or in the average number of negative household events in the last two years (about 1 event). There are no significant sex differences in community characteristics experienced by respondents. Finally, Table 1 shows the average scores on scales of social disorder (0.56) and social cohesion (1.3) across enumeration areas, and the average score on the index of concentrated disadvantage (2.2).

Table 2 presents correlations between the community characteristics, with the individual-level data (N = 2,736) shown above the diagonal for comparison with the community-level data

below the diagonal ( $N = 91$ ). We find that counter to expectations from US-based theory and empirical evidence, concentrated disadvantage is *negatively* associated with social disorder – in other words, social disorder as measured by crime and other violent experiences is less common in the most disadvantaged neighborhoods in KwaZulu-Natal. Also counter to US-based evidence, social cohesion is *higher* in communities where disadvantage is more concentrated. While these findings do not support for theories of social disorganization and concentrated disadvantage, a study of communities in Brazilian neighborhoods also found that social cohesion and neighborhood disadvantage were positively related (Villarreal and Silva 2006). As expected, however, as social disorder rises, social cohesion declines, in the strongest relationship observed among these three measures. It is also important to note that the strongest correlation coefficient is about 0.4, suggesting that we may be able to untangle the independent associations of each community characteristic with sexual behavior.

### **Multivariate Results**

Table 3 presents unstandardized coefficients from multilevel discrete time hazard models of sexual debut. For both sexual debut and unprotected sex (shown in Table 5), Models 1 through 3 focus on the way that community characteristics affect the hazard of sexual debut. We start by examining only concentrated disadvantage (Model 1), then add social disorder (Model 2), and finally add social cohesion (Model 3) to assess the gross association between community conditions and sexual behavior and the way that some conditions may mediate structural disadvantage. We include age, duration and duration squared, and sex of respondent as the only control variables in these models. Model 4 adds all other individual and household level predictors to examine how the non-random distribution of young people across communities



might mediate the associations between community-level characteristics and sexual debut, while Model 5 adds interaction terms to explore whether the associations may vary by sex.

The results in Table 3 show that net of sex, age, and duration since entering risk, concentrated disadvantage is marginally positively associated with the hazard of having sex. Risk increases with age and duration since entering risk, though the duration-squared term indicates that the increase in hazard of initiating sexual activity slows over time as more individuals become sexual active. Males have a substantially higher hazard of sexual debut than females, as expected. Model 2 shows that social disorder does not mediate the effect of concentrated disadvantage, and in fact strengthens that positive association with the hazard of sexual debut. Social disorder itself is also significantly positively associated with sexual debut. In Model 3, we find that social cohesion is strongly and negatively associated with the hazard of initiating sexual activity, while concentrated disadvantage and social disorder remain positive predictors, though the coefficient for social disorder is reduced slightly in magnitude and significance. Results for Model 4 show that this pattern of results is similar when all other individual and household-level predictors are added to the model, though the association between concentrated disadvantage and sexual debut declines and is only marginally significant, while the magnitude of the other two estimated community effects is reduced only slightly. Model 4 also shows that young people who report a greater importance of religion have a lower hazard of sexual debut, while those who have moved, those who are not enrolled in school, and those who have fewer than two adults in the household have a greater hazard. Having more household assets is marginally positively associated with sexual debut. Finally, when we add cross-level interactions between sex and community characteristics, we observe that the

association between social cohesion and sexual debut appears to be concentrated among males, who are protected by this community resource.

The significant interaction between respondent's sex and social cohesion suggest the importance of inspecting sex-stratified models of sexual debut. Table 4 presents the results from these models, with females represented in the left panel and males in the right panel. The results in Table 4 verify our observations from the cross-level interactions in Table 3; social cohesion strongly and significantly lowers the hazard of sexual debut for male respondents, but not for their female counterparts. Additionally, among males social cohesion appears to counteract the influence of social disorder. Social disorder is positively associated with the hazard of initiating sex among both males and females in Model 2, but is no longer a significant predictor for males once the measure of social cohesion is included in Model 3. By contrast, social disorder remains a marginally significant predictor of greater hazard of sexual debut for females in the full Model 4. Among females only, concentrated disadvantage is significantly positively associated with a greater hazard of sexual debut, but this association decreases to nonsignificance once individual and household characteristics are controlled in Model 4. Turning to those characteristics, we find that the importance of religion may have a stronger protective effect for females, while being out of school, having more household assets, and living with fewer than two adults are stronger risk factors for females and negative household events are a stronger risk factor for males.

Now considering respondents who have had sex, Table 5 presents unstandardized coefficients from multilevel logistic regression models of unprotected sex. Models 1 through 4 show that concentrated community disadvantage is associated with a significantly greater likelihood of reporting not using a condom with the last partner in the past year, net of the other community characteristics. Unexpectedly, social disorder is significantly negatively associated

with unprotected sex in this sample, while we do not observe any association between social cohesion and unprotected sex. Model 4 shows that those not enrolled in school are more likely to have unprotected sex, males are less likely to do so, and community group membership and household assets may protect against unprotected sex. When we include cross-level interactions with respondent's sex in Model 5, we find that the negative association between social disorder and unprotected sex is stronger for males. Table 6 presents results from sex-stratified models of unprotected sex to further explore this interaction; results show that the only males are less likely to take this risk in communities where more social disorder has been reported. Concentrated disadvantage increases the risk of unprotected sex for males and females, though the association is no longer significant for females once individual and household factors are considered in Model 4. Among females only, risk increases with age, while it is lower for those involved in community groups and those living in households with greater assets. Males living with fewer than two adults and those exposed to negative household events are marginally more likely to report unprotected sex.<sup>8</sup>

## DISCUSSION

Understanding the factors that influence sexual behavior of young people is of great importance in South Africa, a nation facing a serious HIV/AIDS epidemic in the aftermath of a long history of institutionalized racial discrimination. Beyond these serious issues of public health and social inequality, South Africa also provides a compelling social context in which to

---

<sup>8</sup> In addition to including social disorder and social cohesion as predictors together in the models predicting sexual behavior, and one at a time, we also explored an interaction between the two measures. We wondered if in high social disorder communities, social cohesion would not be as powerful a predictor of young people's behavior. Because of the potential bidirectional relationship between social disorder and social cohesion, their interaction is of substantial theoretical interest. Using a dichotomous indicator of living in a community with high social disorder *and* low social cohesion (in addition to the continuous indicators of each characteristic), we did not find any significant evidence for interaction in models of the outcomes explored here.

examine theoretical expectations about community characteristics and individual sexual behavior that were developed largely in the United States. In this study we explored the influence of community characteristics on sexual debut and likelihood of engaging in unprotected sex, using community-level data from several sources and individual-level data from young Black South Africans in KwaZulu-Natal. We asked several questions: first, are concentrated disadvantage and social disorder associated with earlier sexual debut and greater risk of unprotected sex among young Black South Africans, net of individual and household-level characteristics? Does social cohesion protect against early sexual debut and unprotected sex in South Africa? Finally, do these relationships vary by gender?

Using multilevel discrete time hazard models and multilevel logistic regression models, we find that net of a wide array of individual and household characteristics, young men and women in communities with relatively high levels of concentrated disadvantage have a greater hazard of sexual debut and a higher risk of unprotected sex. The associations between concentrated disadvantage and these markers of risky sexual behavior are not explained by the social processes that may emerge from community structural disadvantage—indicated here by social disorder and social cohesion. In sex-stratified models, we observe that the impact of concentrated disadvantage appears to be greater for females when considering sexual debut, while it is associated with unprotected sex among both males and females. Furthermore, female respondents' individual and household characteristics appear to mediate the impact of concentrated disadvantage, while this is not the case for males. Our results regarding social disorder and social cohesion, by contrast, show mixed support for expectations based on US theories. Social disorder is positively associated with the hazard of sexual debut, though this effect is concentrated among females. Unexpectedly, social disorder is negatively associated

with the risk of unprotected sex for males. Social cohesion protects against unprotected sex, but only for males in our sample.

How do these results compare to the empirical findings from the US? The significant positive association we found between concentrated disadvantage and the hazard of sexual debut for females (Browning et al. 2004, 2005; Cubbin et al. 2005; Upchurch et al. 1999) and the risk of unprotected sex for all respondents (Baumer and South 2001; Mosher and McNally 1991) support the findings of US-based studies. However, we find that greater social disorder is associated with a greater hazard of sexual debut for females only, while one previous study examining this association in the US found a significant association among both males and females (Upchurch et al. 1999). Because the risk of sexual victimization is so high among South African females (Republic of South Africa 1998) and because females are generally thought to be more vulnerable to crime, we conducted additional analyses to determine if girls in communities with high levels of social disorder were more likely to experience a coerced sexual debut, but found no evidence to suggest that this was the case (results not shown).

Additionally, we find that living in a socially disordered community is associated with a *lower* risk of unprotected sex among males, but not among females—a somewhat counterintuitive finding and one that contradicts predictions from at least one other study of contextual effects (Upchurch et al. 1999). We can speculate that in light of the very high levels of violence and crime in South Africa and the rapidly growing HIV epidemic, increased condom use may reflect attempts by young men to exert personal control in the midst of an environment that is mostly beyond their control. Importantly, net of community, household and individual characteristics we find that males have significantly and substantially lower likelihood of reporting unprotected sex than do females in this sample.

Young females in this population may not be responding to social disorder with increased condom use because they may have much less power in their sexual interactions than their male partners. Previous research in South Africa has demonstrated that young men control the terms of sexual intercourse almost exclusively and that girls and young women are often afraid of provoking violence from their partners if they attempt to negotiate condom use or refuse to have sex without a condom (Jewkes et al. 1999; Jewkes et al. 2001). Moreover, young women are often under significant pressure from their partners to prove their fertility (Preston-Whyte et al. 1990; Richter 1996; Varga and Makubalo 1996; Wood et al. 1997). Having unprotected sex in communities where social disorder is high could also reflect a conscious strategy among young women to gain access to economic resources. For example, they may have unprotected sex intentionally in order to get pregnant; the state-sponsored Child Welfare Grant is a sure source of income in an otherwise inhospitable economy. Alternatively, they may be engaging in transactional sex, exchanging sex for money or material goods, and not using condoms at the insistence of their male partners. Transactional sex is widely practiced in sub-Saharan Africa and is culturally distinct from prostitution; many, if not most men who participate in these exchanges refuse to use condoms, and the material benefits they offer give them more power to assert their wishes (Kaufman and Stavrou 2002; Luke and Kurz 2002).

Turning to our findings for social cohesion, we observed that it lowered the hazard of sexual debut for males only, while a US study found that collective efficacy, a more elaborated measure of social cohesion, delayed sexual debut among both males and females (Browning et al. 2005). In South Africa, community streets and street corners are central gathering places for poor, urban residents. Groups of men commonly gather on street corners and front stoops and at local shebeens (unlicensed community establishments serving usually home-brewed alcohol).

Adolescent boys and young men spend more time “hanging out” outside the home than young females do (Kaufman et al. 2002), so young men may be more heavily influenced by community collective efficacy because they are more exposed to community residents.

There are several important limitations of the analyses presented here that should condition the interpretation of our findings. First, our analysis examines sexual behavior only among young Blacks, in part because of small numbers of non-Blacks available in the sample, a reflection of the racial demographics of the South African population. While our results demonstrate that enough variation exists even among the Black population to warrant analysis among this population, we cannot generalize our findings to South Africa overall. Future data collection efforts should strive to obtain large enough samples of other population groups to permit a more complete analysis. Nevertheless, while studies will undoubtedly reveal persistent and large between-race differences, it is important to underscore the importance of within-race inequality in the “new” South Africa; race should not be the only characteristic used to determine the appropriate targets of program and policy interventions. Focusing on a single population group also helps to illuminate the impact of household and community influences on young people’s behavior, influences that can be difficult to discern when comparing across groups that differ dramatically in average levels of available resources or living conditions. For example, the distributions of household assets among Black and White South African young people are often nearly non-overlapping, making it challenging to estimate statistical models or make policy recommendations based on samples of the entire South African population.

Second, our study cannot address the possibility, noted in other studies of community effects, that parents may alter their parenting style and behaviors according to the characteristics of the community context (Reardon et al. 2002; Greenman and Xie, forthcoming). For example,

Browning and colleagues (2005) found that community-level characteristics only influenced the timing of sexual debut for those adolescents who received the least parental monitoring—that is, those most exposed to the community environment. More generally, we have no information on parenting in these data and can only speculate on the ways parents' behavior may mediate the influence of community, household, and individual characteristics on young South Africans. Future research should include efforts to gather such data.

Finally, like most other studies of community effects, we cannot address some important methodological limitations. The endogeneity of community choice—that is, the possibility that individual and family characteristics that determine residential location are also determinants of the outcome in question—is one of the more significant and unavoidable limitations of community studies and could account completely for the observed community effects (Jencks and Mayer 1990). For example, our social cohesion measure may proxy for more involved parenting at the family level. While self-selection into communities may have been minimally-influential during apartheid, when residential restrictions were in place, those restrictions had been lifted for approximately seven years before the Transitions survey took place. At least some individuals and families—most likely those with greater means and perhaps fewer problems—took advantage of this new freedom to relocate. This non-selective migration out of troubled communities will likely continue as macroeconomic development proceeds, perhaps resulting in a more similar distribution of the poorest households in the most disadvantaged neighborhoods, and making South African communities more similar to the US communities we implicitly reference here. In addition, we cannot address the issue of endogenous program placement—the targeting of HIV informational or prevention programs, distribution of free condoms, and the like in communities with higher risk of HIV transmission—in the current study, but future work



should consider this. Targeted program placement may mute associations between community characteristics and unprotected sex.

Despite these limitations, our findings suggest that community conditions may have important influences on young peoples' behavior and merit further investigation. The persistence of sexual risk-taking behavior in spite of decades of prevention efforts suggests that new avenues of research and programming are needed. If community characteristics do indeed influence the decisions that young Black South Africans make about whether to have sex and whether to use condoms, as our results suggest they do, attention to conditions such as concentrated disadvantage, social disorder, and social cohesion may offer new leverage in HIV prevention efforts.

## REFERENCES

- Adato, Michelle, Michael Carter, and Julian May. 2006. "Exploring Poverty Traps and Social Exclusion in South Africa, Using Qualitative and Quantitative Data." *Journal of Development Studies* 42:226-247.
- Alan Guttmacher Institute. 1996. *Sex and America's teenagers*. New York, NY : Alan Guttmacher Institute.
- Andersson, N and S Marks. 1988. "Apartheid and health in the 1980s." *Social Science & Medicine* 27:667-681.
- Bachmann, Max, Leslie London, and Peter Barron. 1996. "Infant mortality rate inequalities in the Western Cape Province of South Africa." *International Journal of Epidemiology*, 25:966-972.
- Banerjee, Abhijit, Sebastian Galiani, Jim Levinsohn, Zoë McLaren, and Ingrid Woolard. 2007. "Why Has Unemployment Risen in the New South Africa?" in Presented at the Conference on Labor Markets in Developing and Transition Economies: Emerging Policy and Analytical Issues. Ann Arbor, MI [USA].
- Baumer, Eric P and Scott J South. 2001. "Community effects on youth sexual activity." *Journal of Marriage and Family* 63: 540-545.
- Billy, John O G, Karin L Brewster, William R Grady, and David E Moore. 1994. "Community Effects on Adolescent Sexual Behavior." *Journal of Marriage and Family* 56:387-404.
- Black, Maureen M, Izabel B Ricardo, and Bonita Stanton. 1997. "Social and psychological factors associated with AIDS risk behaviors among low income, urban, African American adolescents: Implication for intervention." *Journal of Research on Adolescence* 7:173-195.
- Brewster, Karin L. 1994. "Race Differences in Sexual Activity among Adolescent Women: The Role of Neighborhood Characteristics." *American Sociological Review* 59:408-424.
- Brewster, Karin L., John O G Billy, and William R Grady. 1993. "Social context and adolescent sexual behavior: The impact of community on the transition to sexual activity." *Social Forces* 71:713-740.
- Brooks-Gunn, Jeanne, Greg J Duncan, Pamela Kato Klebanov, and Naomi Sealand. 1993. "Do Communities Influence Child and Adolescent Development?" *American Journal of Sociology* 99:353-395.
- Browning, Christopher R and Kathleen A Cagney. 2003. "Moving beyond poverty: Neighborhood structure, social processes, and health." *Journal of Health and Social Behavior* 44:552-571.

- Browning, Christopher R, Tama Leventhal, and Jeanne Brooks-Gunn. 2004. "Neighborhood Context and Racial Differences in Early Adolescent Sexual Activity." *Demography* 41:607-720.
- Browning, Christopher R, Tama Leventhal, and Jeanne Brooks-Gunn. 2005. "Sexual Initiation in Early Adolescence: The Nexus of Parental and Community Control." *American Sociological Review* 70:758-778.
- Burgard, Sarah A. 2002. "Does Race Matter? Children's Height in Brazil and South Africa." *Demography* 39:763-790.
- Burgard, Sarah A. 2004. "Race and Pregnancy-Related Care in Brazil and South Africa." *Social Science and Medicine* 59(6): 1127-1146
- Burgard, Sarah A and Donald J Treiman. 2006. "Trends and Racial Differences in Infant Mortality in South Africa." *Social Science and Medicine* 62:1126-1137.
- Burton, Patrick, Anton du Plessis, Ted Leggett, Antoinette Louw, Duxita Mistry, and Hennie van Vuuren. 2003. "National Victims of Crime Survey." Monograph no. 101, July 2004. Institute for Security Studies, Pretoria, South Africa.
- Chaning-Pearce, S M and L Solomon. 1986. "A Longitudinal Study of Height and Weight in Black and White Johannesburg Children." *South African Medical Journal* 70:743-746.
- Cleveland, H. H. and M. Gilson. 2004. "The Increased Importance of Mother-Child Relationships on Sexual Behaviors of Adolescents in Disadvantaged Neighborhoods." *Journal of Youth and Adolescence* 33: 319-329.
- Cohen, Deborah, Karen Mason, A Bedimo, Richard Scribner, V Basolo, and Thomas A Farley. 2003. "Neighborhood physical conditions and health." *American Journal of Public Health* 93:467-471.
- Cohen, Deborah, Suzanne Spear, Richard Scribner, Patty Kissinger, Karen Mason, and John Wildgen. 2000. "'Broken Windows' and the Risk of Gonorrhoea." *American Journal of Public Health* 90:230-236.
- Coleman, James S. 1988. "Social capital in the creation of human capital." *American Journal of Sociology* 94:S94-S120.
- Cubbin, Catherine, John Santelli, Claire D Brindis, and Paula Braveman. 2005. "Neighborhood Context and Sexual Behaviors Among Adolescents: Findings from the National Longitudinal Study of Adolescent Health." *Perspectives on Sexual and Reproductive Health* 37:125-134.
- Davis, Susan S. , and Douglas A. Davis. 1989. *Adolescence in a Moroccan Town: Making Social Sense*. New Brunswick, NJ: Rutgers University Press.

DeWit, David J. 1998. "Frequent childhood geographic relocation: Its impact on drug use initiation and the development of alcohol and other drug-related problems among adolescents and young adults." *Addictive Behaviors* 23:623-636.

Dinkelman, Taryn, David Lam, and Murray Leibbrandt. 2007. "Household income, income shocks, and risky sexual behavior of young adults: Evidence from the Cape Area Panel Study 2002 and 2005." *AIDS* 21 S49-S56.

Duncan, Greg J and Stephen W Raudenbush. 2001. "Neighborhoods and adolescent development: How can we determine the links?" Pp. 105-136 in Does it Take a Village? Community Effects on Children, Adolescents, and Families, edited by A. Booth and N. Crouter. State College, PA : Pennsylvania State University Press.

Ellen, Jonathan M, Jacky M Jennings, Todd Meyers, Shang-En Chung, and Ralph Taylor. 2004. "Perceived Social Cohesion and Prevalence of Sexually Transmitted Diseases." *Sexually Transmitted Diseases* 31:117-122.

Flewelling, Robert L, and K E Bauman. 1990. "Family structure as a predictor of initial substance use and sexual intercourse in early adolescence." *Journal of Marriage and Family* 52:171-181.

Frye, Victoria, Mary H Latka, Beryl Koblin, Perry N Halkitis, Sara Putnam, Sandro Galea, and David Vlahov. 2006. "The urban environment and sexual risk behavior among men who have sex with men." *Journal of Urban Health* 83: 308-324.

Gage, Anastasia. 1998. "Sexual activity and contraceptive use: The components of the decisionmaking process." *Studies in Family Planning* 29:154-166.

Gibbs, Jewelle Taylor. 1988. "Young Black Males in America: Endangered, Embittered, and Embattled." Pp. 1-36 in Young, Black, and Male in American: An Endangered Species, edited by J. T. Gibbs. Dover, MA: Auburn House Publishing Company.

Gilbert, Leah, and Liz Walker. 2002. "Treading the path of least resistance: HIV / AIDS and social inequalities. A South African case study." *Social Science and Medicine* 54:1093-1110.

Greenman, Emily and Yu Xie. Forthcoming. "Is Assimilation Theory Dead? The Effect of Assimilation on Adolescent Well-Being." *Social Science Research*.

Hallman, Kelly. 2004. "Socioeconomic disadvantage and unsafe sexual behaviors among young women and men in South Africa." in *Policy Research Division Working Paper*. New York, NY [USA]: Population Council.

Jencks, Christopher and Susan E Mayer. 1990. "The Social Consequences of Growing Up in a Poor Neighborhood." Pp. 111-186 in Inner-city Poverty in the United States, edited by L. E. Lynn and M. G. H. McGeary. Washington, DC : National Academy Press.

Jewkes, Rachel K, Caesar Vundule, Fidelia Maforah, and Esme Jordaan. 2001. "Relationship dynamics and teenage pregnancy in South Africa," *Social Science and Medicine* 52 (5): 733-744.

Jewkes, Rachel K, Loveday A. Penn-Kekana, Jonathan B Levin, Matsie Ratsaka, and Margaret Schriber. 1999. "‘He must give me money, he mustn't beat me’: Violence against women in three South African provinces." Medical Research Council, Pretoria, South Africa.

Kaufman, Carol E. 1998. "Contraceptive Use in South Africa Under Apartheid." *Demography* 35:421-434.

Kaufman, Carol E., Shelley Clark, Ntsiki Manzini, and Julian May. 2002. "How Community Structures of Time and Opportunity Shape Adolescent Sexual Behavior in South Africa." in Working Paper Series. New York, NY: The Population Council.

Kaufman, Carol E and Stavros E. Stavrou. 2002. "‘Bus fare, please’: The economics of sex and gifts among adolescents in urban South Africa." New York, NY: Population Council, Policy Research Division Working Paper no. 166.

Kauppinen, Timo M. 2006. "Neighborhood effects in a European city: Secondary education of young people in Helsinki." *Social Science Research* 36:421-444.

Leventhal, Tama and Jeanne Brooks-Gunn. 2000. "Neighborhoods They Live in: The Effects of Neighborhood Residence on Child and Adolescent Outcomes." *Psychological Bulletin* 126:309-337.

Li, X, S Feigelman, and B Stanton. 2000. "Perceived parental monitoring and health risk behaviors among urban low-income African-American children and adolescents." *Journal of Adolescent Health* 27:43-48.

Luke, Nancy, and Kathleen M. Kurz. 2002. "Cross-Generational and Transactional Sexual Relations in Sub-Saharan Africa: Prevalence of Behavior and Implications for Negotiating Safer Sexual Practices." Washington, DC: International Center for Research on Women.

Massey, Douglas and Nancy A Denton. 1993. *American Apartheid: Segregation and the Making of the Underclass*. Cambridge, MA : Harvard University Press.

Meier, Ann M. 2007. "Adolescent First Sex and Subsequent Mental Health." *American Journal of Sociology* 112:1811-1847.

Mensch, Barbara S, Judith Bruce, and Margaret E Greene. 1998. The Uncharted Passage: Girls' Adolescence in the Developing World. New York, NY , Population Council.

Moll, Peter. 1998. "Discrimination is declining in South Africa, but inequality is not." vol. 5. Cape Town, South Africa: South African Network for Economic Research.

- Montgomery, Mark R and Paul C Hewett. 2004. "Urban Poverty and Health in Developing Countries: Household and Neighborhood Effects." in *Policy Research Division Working Paper Series*. New York, NY : Population Council.
- Mosher, William D and James W McNally. 1991. "Contraceptive use at first premarital intercourse: United States, 1965-1988." *Family Planning Perspectives* 23:108-116.
- Nathanson, Constance. 1993. *Dangerous Passage: The Social Control of Sexuality in Women's Adolescence*. Philadelphia, PA : Temple University Press.
- Petersen, Inge, Anil Bhagwanjee, Arvin Bhana, and Fisani Mzimela. 2004. "Public Health Challenges in an Era of HIV/AIDS." Pp. 285-308 in Urban reconstruction in the developing world, edited by P. Robinson, J. McCarthy, and C. Forster. Cape Town, South Africa: Heinemann.
- Preston-Whyte, Eleanor M, Maria Zondi, Gladys Mavundla, and Hilda Gumede. 1990. "Teenage pregnancy, whose problem? Realities and prospects for action in KwaZulu/Natal." *South African Journal of Demography* 3:11-20.
- Ramirez-Valles, Jesus, Marc A Zimmerman, and Lucia Juarez. 2002. "Gender Differences of Neighborhood and Social Control Processes: A Study of the Timing of First Intercourse among Low-achieving, Urban, African American Youth." *Youth & Society* 33:418-441.
- Rasch, Georg. 1980. Probabilistic models for some intelligence and attainment tests. Chicago, IL: University of Chicago.
- Raudenbush, Stephen W and Robert J Sampson. 1999. "Ecometrics: Toward a science of assessing ecological settings, with application to the systematic social observations of neighborhoods." *Sociological Methodology* 29:1-41.
- Reardon, Sean F, Robert T Brennan, and Stephen L Buka. 2002. "Estimating Multi-Level Discrete-Time Hazard Models Using Cross-Sectional Data: Neighborhood Effects on the Onset of Adolescent Cigarette Use." *Multivariate Behavioral Research* 37:297-330.
- Reddy, Priscilla H, S Panday, D Swart, C C Jinabhai, S L Amosun, S James, K D Monyeki, G Stevens, N Morejele, N S Kambaran, R G Omardien, and H W Van den Borne. 2003. "Umthenthe Uhlaba Usamila – South Africa National Youth Risk Behaviour Study 2002." South African Medical Research Council, Cape Town, South Africa.
- Republic of South Africa. 1998. "South Africa Demographic and Health Survey 1998: Final Report." Department of Health; Republic of South Africa, Pretoria, South Africa.
- Resnick, M D , P S Bearman, R W Blum, K E Bauman, Kathleen Mullan Harris, J Jones, J Tabor, T Beuhring, RE Sieving, M Shew, M Ireland, LH Bearinger, and Richard J Udry. 1997. "Protecting adolescents from harm: Findings from the national longitudinal study on adolescent health." *Journal of the American Medical Association* 278:823-832.

Richter, Linda M. 1996. "A survey of reproductive health issues among urban black youth in South Africa: Final Grant Report." Center for Epidemiological Research in South Africa, Medical Research Council, Pretoria, South Africa.

Rutenberg, Naomi, Cathrien Kehus-Alons, Lisanne Brown, Kate Macintyre, Anthea Dallimore, and Carol E Kaufman. 2001. "Transitions to Adulthood in the Context of AIDS in South Africa: Report of Wave I." Population Council, New York, NY.

Sampson, Robert J, Stephen W Raudenbush, and Felton Earls. 1997. "Neighborhoods and Violent Crime: A Multilevel Study of Collective Efficacy." *Science* 277:918-924.

Sampson, Robert J, Jeffrey D Morenoff, and Thomas Gannon-Rowley. 2002. "Assessing "Neighborhood Effects": Social Processes and New Directions in Research." *Annual Review of Sociology* 28:443-478.

Shisana, Olive, T Rehle, Leickness C Simbayi, W Parker, Khangelani Zuma, A Bhana, C Connolly, S E Jooste, and V Pillay. 2005. South African National HIV Prevalence HIV Incidence, Behaviour and Communication Survey, 2005. Cape Town, South Africa: HSRC Press.

Simons, Leslie G, Ronald L Simons, Rand D Conger, and Gene H Brody. 2004. "Collective Socialization and Child Conduct Problems: A Multilevel Analysis with an African American Sample." *Youth and Society* 35:267-292.

Statistics South Africa. 2007. "Mid-year population estimates, 2007 (Statistical Release P0302)." Statistics South Africa, Pretoria, South Africa.

Statistics South Africa. 1996. South African Census, 1996, 10% Sample.

Svensson, Robert. 2003. "Gender differences in adolescent drug use—The impact of parental monitoring and peer deviance." *Youth & Society* 34:300-329.

Swanson, Christopher B and Barbara Schneider. 1999. "Students on the move: Residential and educational mobility in America's schools." *Sociology of Education* 72:54-67.

Treiman, Donald J, Matthew McKeever, and Eva Fodor. 1996. "Racial Differences in Occupational Status and Income in South Africa, 1980 and 1991." *Demography* 33:111-132.

Tubman, Jonathan G, Michael Windle, and Rebecca C Windle. 1996. "Cumulative Sexual Intercourse Patterns among Middle Adolescents: Problem Behavior Precursors and Concurrent Health Risk Behaviors." *Journal of Adolescent Health* 18:182-191.

UNAIDS. 1999. "Young People and HIV/AIDS: UNAIDS Briefing Paper." UNAIDS, Geneva, Switzerland.

- UNAIDS. 2000. "Epidemiological Fact Sheet on HIV/AIDS and Sexually Transmitted Infections: South Africa." Geneva, Switzerland: UNAIDS/WHO Working Group on Global HIV/AIDS & STI Surveillance.
- UNAIDS. 2006. "2006 Report on the Global AIDS Epidemic." United Nations, New York, NY .
- Upchurch, Dawn, Carol S Aneshensel, Clea A Sucoff, and Lené Levy-Storms. 1999. "Neighborhood and Family Contexts of Adolescent Sexual Activity." *Journal of Marriage and the Family* 61:920-933.
- Van Donk, Mirjam. 2002. "The missing element: HIV/AIDS in urban development planning: Reviewing the South African response to the HIV/AIDS epidemic." Working Paper No. 118. London, UK: Development Planning Unit, University College London.
- Varga, Christine A and L E Makubalo. 1996. "Sexual non-negotiation." *Agenda* 28:31-38.
- Villareal, Andres and Braulio F.A. Silva. 2006. "Social Cohesion, Criminal Victimization and Perceived Risk of Crime in Brazilian Neighborhoods." *Social Forces* 84(3): 1725-1753.
- Wei, Evelyn, Alison Hipwell, Dustin Pardini, Jennifer M Beyers, and Rolf Loeber. 2005. "Block observations of neighbourhood physical disorder are associated with neighbourhood crime, firearm injuries and deaths, and teen births." *Journal of Epidemiology and Community Health* 59:904-908.
- Wilson, James Q and George L Kelling. 1982. "Broken Windows". *Atlantic Monthly*, March 1982.
- Wilson, William Julius. 1987. *The Truly Disadvantaged: The Inner City, the Underclass, and Public Policy*. Chicago, IL : University of Chicago Press.
- Wilson, William Julius. 1996. *When Work Disappears: The World of the New Urban Poor*. New York, NY : Vintage.
- Wood, Katharine and Rachel K Jewkes. 1997. "Violence, Rape and Sexual Coercion: Everyday Love in a South African Township." *Gender and Development* 5:12-35.
- Wu, Lawrence L and Elizabeth Thomson. 2001. "Race differences in family experience and early sexual initiation: Dynamic models of family structure and family change." *Journal of Marriage and Family* 63:682.



Table 1. Means or Percentages for Key Variables by Sex, Black South African Respondents from the Transitions Study,

<i>Dependent Variables</i>	Range/Coding	N	Females	Males	p for diff.
			Mean (SD)/%	Mean (SD)/%	
Ever had sex	1 = Yes	2736	58.5%	67.1%	<.001
Age at sexual debut, among those who have had sex	10 - 22 years	1697	16.43 (1.80)	15.28 (2.18)	<.001
Unprotected Sex: no condom used during last sex in past 12 months, among those who have had sex	1 = Yes	1697	44.6%	29.5%	<.001
<i>Individual &amp; Household Level Independent Variables</i>					
Age (years)	13 - 24 years	2736	18.29 (2.86)	18.22 (2.72)	0.083
Importance of religion	0 = Not at all, 2 = Very	2736	1.77 (0.01)	1.78 (0.01)	0.507
Residential moves (number)	0 - 13 moves	2736	1.01 (1.37)	0.950 (1.29)	0.671
Not currently enrolled in school	1 = Yes	2736	0.382	0.310	<.001
Community group membership (number)	0 - 5 organizations	2736	1.02 (1.02)	1.65 (1.30)	<.001
Household assets	-2.40 to 0.767	2736	-0.280 (0.70)	-0.254 (0.73)	0.029
Fewer than 2 adults in household	1 = Yes	2736	0.262	0.248	0.173
Negative household events (number)	0 - 5 events	2736	1.01 (1.00)	1.12 (1.04)	0.230
<i>Neighborhood Level Independent Variables</i>					
			<u>All Enumeration Areas</u>		
Social disorder	-2.42 to 4.18	91	0.561 (0.962)		
Social cohesion	0.248 to 2.71	91	1.34 (0.466)		
Concentrated disadvantage	0 to 8 conditions	91	2.16 (2.742)		

*Note* : Figures based on weighted data, except column totals and t-tests or Kruskal-Wallis tests for difference across female and male samples. Figures for age at sexual debut and unprotected sex are based on restricted analytic sample of respondents who have had intercourse, N(female) = 891, N(male) = 840. All other Individual variables are based on sample N(female) = 1,479, N(male) = 1,257.

Table 2. Correlations of Community Characteristics at Individual (Above diagonal) and Community (Below diagonal) Levels.

	Concentrated Disadvantage	Social Disorder	Social Cohesion
Concentrated Disadvantage	--	-0.14	0.26
Social Disorder	-0.26	--	-0.33
Social Cohesion	0.34	-0.43	--

Note: Individual-level data above diagonal (N=2736), community level data below diagonal (N=91).

Table 3. Unstandardized Coefficients from Multilevel Discrete Time Hazard Models of Sexual Debut, Transitions Study 2001.

	M1		M2		M3		M4		M5	
<i>Neighborhood-Level Variables</i>										
Concentrated disadvantage	0.039	†	0.049	*	0.059	**	0.043	†	0.055	*
	(0.022)		(0.020)		(0.021)		(0.023)		(0.024)	
Social disorder	--		0.196	**	0.148	*	0.138	*	0.165	*
			(0.062)		(0.057)		(0.056)		(0.072)	
Social cohesion	--		--		-0.349	**	-0.306	*	-0.182	
					(0.119)		(0.118)		(0.132)	
Male * Concentrated disadvantage	--		--		--		--		-0.034	
									(0.028)	
Male * Social disorder	--		--		--		--		-0.088	
									(0.083)	
Male * Social cohesion	--		--		--		--		-0.346	*
									(0.174)	
<i>Individual- &amp; Household- Level Variables</i>										
Age	0.038	**	0.037	*	0.037	*	-0.018		-0.018	
	(0.014)		(0.014)		(0.015)		(0.015)		(0.015)	
Duration	1.154	***	1.160	***	1.162	***	1.179	***	1.183	***
	(0.044)		(0.046)		(0.047)		(0.048)		(0.049)	
Duration squared	-0.062	***	-0.063	***	-0.063	***	-0.063	***	-0.063	***
	(0.004)		(0.004)		(0.005)		(0.005)		(0.005)	
Male	0.528	***	0.539	***	0.529	***	0.592	***	0.608	***
	(0.072)		(0.073)		(0.074)		(0.073)		(0.073)	
Importance of religion	--		--		--		-0.201	**	-0.203	**
							(0.059)		(0.059)	
Residential moves	--		--		--		0.091	***	0.089	***
							(0.020)		(0.021)	
Not currently enrolled in school	--		--		--		0.493	***	0.490	***
							(0.063)		(0.064)	
Community group membership	--		--		--		-0.023		-0.022	
							(0.022)		(0.022)	
Household assets	--		--		--		0.033	†	-0.119	†
							(0.065)		(0.065)	

(Table 3 continued below.)

Table 3, continued. Unstandardized Coefficients from Multilevel Discrete Time Hazard Models of Sexual Debut, Transitions Study 2001.

	M1		M2		M3		M4		M5	
Fewer than 2 adults in household	--		--		--		0.065 **	(0.088)	0.259 **	(0.089)
Negative household events	--		--		--		0.053	(0.033)	0.053	(0.033)
Intercept	-6.251 ***	(0.115)	-6.314 ***	(0.120)	-6.326 ***	(0.122)	-6.489 ***	(0.165)	-6.507 ***	(0.165)
Level 2 Variance	0.276 ***		0.228 ***		0.227 ***		0.188 ***		0.189 ***	
Level 2 Variance (Male)	0.231 ***		0.224 ***		0.222 ***		0.205 ***		0.180 ***	
N (person years)	22221		22221		22221		22221		22221	
N (individuals)	2736		2736		2736		2736		2736	
N (EAs)	91		91		91		91		91	

Note : Models are weighted using level-one weight for Transitions sample members. \*\*\* p<.001, \*\*p<.01, \*p<.05, †p<.10.

Table 4. Unstandardized Coefficients from Sex-Stratified Multilevel Discrete Time Hazard Models of Sexual Debut, Transitions Study 2001.

	Females				Males											
	M1	M2	M3	M4	M1	M2	M3	M4								
<i>Neighborhood-Level Variables</i>																
Concentrated disadvantage	0.066 *	0.086 **	0.082 **	0.041	0.007	0.014	0.032	0.025	(0.025)	(0.025)	(0.026)	(0.031)				
Social disorder	--	0.220 *	0.195 *	0.154 †	--	0.143 *	0.078	0.067	(0.086)	(0.087)	(0.064)	(0.059)	(0.057)			
Social cohesion	--	--	-0.193	-0.156	--	--	-0.482 **	-0.481 **	(0.157)	(0.163)	(0.148)	(0.148)				
<i>Individual- &amp; Household- Level Variables</i>																
Age	0.043 *	0.043 †	0.042 †	-0.041	0.034 †	0.034 †	0.032 †	0.004	(0.022)	(0.022)	(0.022)	(0.028)	(0.018)	(0.018)	(0.032)	(0.020)
Duration	1.720 ***	1.730 ***	1.727 ***	1.768 ***	0.949 ***	0.950 ***	0.952 ***	0.961 ***	(0.074)	(0.078)	(0.079)	(0.084)	(0.065)	(0.066)	(0.067)	(0.068)
Duration squared	-0.096 ***	-0.097 ***	-0.097 ***	-0.097 ***	-0.054 ***	-0.054 ***	-0.054 ***	-0.054 ***	(0.006)	(0.006)	(0.006)	(0.007)	(0.006)	(0.006)	(0.007)	(0.007)
Importance of religion	--	--	--	-0.235 **	--	--	--	-0.153	(0.078)	(0.093)						
Residential moves	--	--	--	0.075 *	--	--	--	0.093 **	(0.035)	(0.029)						
Not currently enrolled in school	--	--	--	0.750 ***	--	--	--	0.227 *	(0.117)	(0.101)						
Community group membership	--	--	--	-0.057	--	--	--	0.000	(0.039)	(0.031)						

(Table 4 continued below.)

Table 4, continued. Unstandardized Coefficients from Sex-Stratified Multilevel Discrete Time Hazard Models of Sexual Debut, Transitions Study 2001.

	Females				Males			
	M1	M2	M3	M4	M1	M2	M3	M4
Household assets	--	--	--	0.045 *	--	--	--	-0.065
				(0.097)				(0.095)
Fewer than 2 adults in household	--	--	--	0.387 *	--	--	--	0.154
				(0.153)				(0.104)
Negative household events	--	--	--	0.011	--	--	--	0.097 *
				(0.045)				(0.039)
Intercept	-8.322 ***	-8.401 ***	-8.398 ***	-8.670 ***	-4.958 ***	-4.985 ***	-5.001 ***	-5.097 ***
	(0.271)	(0.281)	(0.280)	(0.371)	(0.164)	(0.163)	(0.164)	(0.212)
Level 2 Variance	0.377 ***	0.326 ***	0.322 ***	0.282 ***	0.208 ***	0.191 ***	0.155 ***	0.172 ***
N (person years)	12620	12620	12620	12620	9601	9601	9601	9601
N (individuals)	891	891	891	891	840	840	840	840
N (EAs)	91	91	91	91	90	90	90	90

Note: Models are weighted using level-one weight for Transitions sample members. \*\*\* p<.001, \*\*p<.01, \*p<.05, †p<.10.

Table 5. Unstandardized Coefficients from Hierarchical Logistic Regression Models of Condom Non-Use among those who Have Had Sex, Transitions Study 2001.

	M1	M2	M3	M4	M5
<i>Neighborhood-Level Variables</i>					
Concentrated disadvantage	0.104 *** (0.029)	0.120 *** (0.030)	0.121 *** (0.031)	0.201 * (0.033)	0.062 (0.040)
Social disorder	--	-0.104 * (0.054)	-0.115 † (0.060)	-0.160 * (0.068)	-0.071 (0.082)
Social cohesion	--	--	-0.019 (-0.019)	-0.046 (0.201)	0.023 (0.221)
Male * Concentrated disadvantage	--	--	--	--	0.047 (0.056)
Male * Social disorder	--	--	--	--	-0.210 † (0.115)
Male * Social cohesion	--	--	--	--	-0.196 (0.244)
<i>Individual- &amp; Household- Level Variables</i>					
Age	0.069 * (0.027)	0.070 * (0.027)	0.070 * (0.027)	0.035 (0.028)	0.034 (0.028)
Male	-0.588 *** (0.124)	-0.594 *** (0.124)	-0.593 *** (0.124)	-0.396 ** (0.150)	-0.421 ** (0.136)
Importance of religion	--	--	--	0.062 (0.102)	0.064 (0.103)
Residential moves	--	--	--	0.063 (0.051)	0.103 (0.052)
Not currently enrolled in school	--	--	--	0.469 * (0.195)	0.492 * (0.195)
Community group membership	--	--	--	-0.181 * (0.077)	-0.173 * (0.079)
Household assets	--	--	--	-0.318 ** (0.103)	-0.317 ** (0.104)
Fewer than 2 adults in household	--	--	--	0.211 (0.131)	0.212 (0.131)
Negative household events	--	--	--	0.091 (0.059)	0.098 † (0.059)
Intercept	-0.363 ** (0.104)	-0.342 ** (0.104)	-0.344 ** (0.104)	-0.790 ** (0.268)	-0.823 ** (0.263)
Level 2 Variance	0.156 ***	0.147 ***	0.155 ***	0.128 **	0.127 ***
N (individuals)	1697	1697	1697	1697	1697
N (EAs)	83	83	83	83	83

Note: Models are weighted using level-one weight for Transitions sample members. \*\*\* p<.001, \*\*p<.01, \*p<.05,

Table 6. Unstandardized Coefficients from Sex-Stratified Multilevel Logistic Regression Models of Condom Non-Use among those who Have Had Sex, Transitions Study 2001.

<i>Neighborhood-Level Variables</i>	Females				Males			
	M1	M2	M3	M4	M1	M2	M3	M4
Concentrated disadvantage	0.103 ** (0.034)	0.102 ** (0.037)	0.101 * (0.039)	0.051 (0.039)	0.154 ** (0.041)	0.137 ** (0.041)	0.139 ** (0.040)	0.131 * (0.051)
Social disorder		-0.027 (0.074)	-0.023 (0.074)	-0.119 (0.089)		-0.220 ** (0.074)	-0.229 * (0.091)	-0.262 * (0.103)
Social cohesion			0.024 (0.200)	-0.031 (0.222)			-0.048 (0.227)	-0.091 (0.263)
<i>Individual- &amp; Household- Level Variables</i>								
Age	0.100 * (0.042)	0.100 * (0.043)	0.100 * (0.043)	0.074 † (0.043)	0.028 (0.031)	0.030 (0.032)	0.030 (0.032)	-0.035 (0.042)
Importance of religion				0.212 (0.150)				-0.110 (0.162)
Residential moves				0.105 (0.067)				0.002 (0.096)
Not currently enrolled in school				0.416 † (0.220)				0.648 * (0.263)
Community group membership				-0.409 *** (0.097)				-0.021 (0.097)
Household assets				-0.487 ** (0.168)				-0.135 (0.154)
Fewer than 2 adults in household				-0.025 (0.167)				0.456 † (0.241)
Negative household events				0.062 (0.082)				0.149 † (0.085)
Intercept	-0.299 ** (0.094)	-0.295 ** (0.094)	-0.296 ** (0.095)	-0.699 *** (0.379)	-0.973 *** (0.116)	-0.950 *** (0.113)	-0.952 *** (0.113)	-1.323 *** (0.350)
Level 2 Variance	0.089	0.096 †	0.103 †	0.088 *	0.236 **	0.208 **	0.221 **	0.261 **
N (individuals)	884	884	884	884	813	813	813	813
N (EAs)	79	79	79	79	79	79	79	79

Note: Models are weighted using level-one weight for Transitions sample members. \*\*\* p<.001, \*\*p<.01, \*p<.05, †p<.10.