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Are social organizational factors independently associated with a current bacterial sexually transmitted infection among urban adolescents and young adults?

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ABSTRACT

This study explored the relationship between the social organization of neighborhoods including informal social control and social cohesion and a current bacterial sexually transmitted infection (STI) among adolescents and young adults in one U.S. urban setting. Data for the current study were collected from April 2004 to April 2007 in a cross-sectional household study. The target population included English-speaking, sexually-active persons between the ages of 15 and 24 years who resided in 486 neighborhoods. The study sample included 599 participants from 63 neighborhoods. A current bacterial STI was defined as diagnosis of a chlamydia and/or gonorrhea infection at the time of study participation. Participants reported on informal social control (i.e. scale comprised of 9 items) and social cohesion (i.e. scale comprised of 5 items) in their neighborhood. In a series of weighted multilevel logistic regression models stratified by gender, greater informal social control was significantly associated with a decreased odds of a current bacterial STI among females (AOR 0.53, 95% CI 0.34, 0.84) after controlling for individual social support and other factors. The association, while in a similar direction, was not significant for males (AOR 0.73, 95% CI 0.48, 1.12). Social cohesion was not significantly associated with a current bacterial STI among females (OR 0.85, 95% CI 0.61, 1.19) and separately, males (OR 0.98, 95% CI 0.67, 1.44). Greater individual social support was associated with an almost seven-fold increase in the odds of a bacterial STI among males (AOR 6.85, 95% CI 1.99, 23.53), a finding which is in contrast to our hypotheses. The findings suggest that neighborhood social organizational factors such as informal social control have an independent relationship with sexual health among U.S. urban youth. The causality of the relationship remains to be determined.

1. Introduction

There is an emerging body of research that suggests that sexual behavior and risks for sexually transmitted infections (STIs) including HIV are complex phenomena. Individual level models of sexual risk propose that demographic and behavioral factors affect sexual health outcomes (Ellen et al., 1997; Hallfors et al., 2007). For instance, individuals are more likely to become infected with an STI

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if they are female, younger, do not consistently use condoms, and/or have multiple or concurrent sexual partners (Burnstein et al., 1998; Ellen et al., 2004; Rosenberg et al., 1999). More recent research suggests that structural level factors also affect sexual health outcomes (Cubbin et al., 2005; Ellen et al., 2004; Jennings et al., 2005; Jennings et al., 2012; Mosher, 2003). Structural level factors are often defined as the economic, social and/or policy organizational environments that create and shape the context in which risk production occurs (Rhodes, 2002).

Research into structural level factors suggests that relationships between structural factors and health outcomes seem to endure even when controlling for individual risk factors and despite changing populations (Sampson, 2003). The structural level factors explored have largely focused on neighborhood measures of socioeconomic status (e.g., poverty concentration, disadvantage), which are important but challenging to address (Crosby and Holtgrave, 2006). A handful of other studies have explored social organizational factors (Berkman and Kawachi, 2000; Cohen et al., 2000; Crosby et al., 2003; Ellen et al., 2005; Putnam, 2000; Sampson, 1997). Crosby et al. (2003) found a significant relationships between state-level social capital (defined using 14 variables which span domains of community organizational life, involvement in public affairs, volunteerism, informal sociability, and social trust) and state-level sexual risk and protective behaviors among youth based on data from the 1999 Youth Risk Behavior Surveillance (YRBS) Survey (Crosby et al., 2003). Many of these studies, however including the one cited by Crosby et al., have explored the relationship between social organizational factors and sexual health at the ecologic level, i.e. not including the individual level. Ecologic study designs do not allow for an explicit examination as to whether the structural and individual relationships exist independent of one another and/or whether there are mediational pathways between the structural and individual factors. Few if any studies have been designed, for example, to determine whether the association between neighborhood level social organizational factors and sexual health are independent of individual level social support.

Understanding whether and the extent to which social organizational factors are independent of individual social support is critical information for interventions designed to decrease STIs among youth. To date, STI prevention efforts by and large have focused on individual-level risk-reduction measures such as promotion of condom use. Such interventions have shown only very limited ability to reduce STI incidence consistently and over time among at-risk youth. It may be that the efforts have failed because they largely ignore the influence of neighborhood social organizational factors or it may be that they have failed because the intervention targets were incorrectly specified at the individual level rather than at the neighborhood level.

1.1. Social organizational characteristics of neighborhoods

Of particular interest to this study are two social organizational factors of neighborhoods — *informal social control* and *social cohesion* (Carpiano, 2006). *Informal social control* reflects the ability of residents to maintain social order (Carpiano, 2006) and/or the capacity of a group to regulate its members according to desired principles (Janowitz, 1975; Sampson, 1997). For example, informal social control may include the willingness of neighborhood residents to intervene to prevent illegal behaviors such as drug markets and commercial sex work from occurring within the neighborhood. Informal social control relies on the mutual trust and respect within a group or geographic area, which can lead to members or residents taking responsibility for one another (Berkman and Kawachi, 2000; Crosby et al., 2003) and realizing common goals (Janowitz, 1975; Sampson, 1997). *Social cohesion*, on the other hand, is defined as the mutual trust and solidarity among neighbors. Social cohesion depends on social ties or social connections and is thought by some to be the foundation of informal social control. Sampson (1997) suggests for example that neighborhood residents will be unlikely to intervene if they do not feel a sense of common goals and/or they mistrust or fear their neighbors. An example of social cohesion is the likelihood that local residents in a neighborhood are willing to help out their neighbors. These social organizational factors may have independent associations with individual level health outcomes or they may operate through other individual level factors such as individual level social support to impact health. According to the buffering model, individual social support may operate through the perceived availability of interpersonal resources (such as availability at the structural and/or for youth, peer level) to help in coping with stressful life events (Cohen and Wills, 1985).

1.2. Informal social control, social cohesion and STIs — mechanisms of action

In the current study the hypothesized mechanisms through which informal social control and social cohesion may affect risks for STIs are presented in a conceptual framework (Fig. 1). The framework builds on a Bourdieu-based conceptual model (adapted from Carpiano, 2006) and sets the dynamics investigated in the current study within a broader outline of how social organizational factors may link to sexual risk behaviors and ultimately, a current bacterial STI among adolescents and young adults.

Our central hypothesis is that these social organizational factors have a direct relationship with STI outcomes based on the idea that they may alter social and sexual network structures and the availability of infected sex partners. The same social connections that lead to increased social cohesion may impact sexual network connections, increasing their density. The density of the local sexual networks connections may increase access to local pools of sex partners. In areas with low (compared to high) STI incidence, increased social cohesion would result in connectivity to fewer infected sex partners and decreased opportunities for STI transmission (Berkman and Kawachi, 2000; Crosby et al., 2003; Jennings et al., 2010). In areas where the incidence of STIs is high (compared to low), increased social cohesion may result in connectivity to greater numbers of infected sex partners, thereby increasing STI transmission.

Additionally, areas with low (compared to areas with high) levels of informal social control are likely to be areas with social disorder such as vandalism, truancy and drug use and sales. Research has shown that drug markets tend to proliferate in areas characterized by lower informal control (Eck, 1995; Reuter and MacCoun, 1992). There is considerable evidence that individuals engaged in drug markets have high rates of STIs and HIV as compared to other groups (Centers for Disease Control and Prevention, 2009; Friedman et al., 2005). Previous multilevel analyses have shown that urban areas with drug markets are associated with a ten-fold increased odds of a current bacterial STI among youth in Baltimore City (Jennings et al., 2012). Thus, youth living in areas with low (vs. high) levels of informal social control may be more likely to have a sexual relationship with an infected sex partner, i.e. a sex partner from their local neighborhood who may be involved in local drug market activities.

It may also be, however, that social organizational factors do not operate independent of individual level social support. Areas with high social cohesion and high informal social control may impact STI outcomes because social cohesion at the structural level may increase individual level social support. Numerous studies have shown an association between individual level social support and STI outcomes. A review of the global literature looking at the