NEIGHBORHOOD EFFECTS on ADOLESCENT HEALTH and RISK BEHAVIORS

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Extended Abstract
Introduction
It is well accepted that individual behavior is tied to broader ecological spheres in which individuals are embedded (Bronfenbrenner, 1979) and social processes occurring at the individual level may be shaped by contextual-level factors. Moreover, neighborhoods may hold new importance for behavioral outcomes during adolescence. Research focuses mostly on risk factors at the neighborhood level – as opposed to positive neighborhood resources – and does not always report consistent findings on the impact of neighborhood risk on adolescent behaviors. This paper addresses these two issues. First, we explore multiple outcomes (mental health, substance use and delinquency measures) and compare the impact of neighborhood factors on various behaviors. Second, we bring in neighborhood protective factors in addition to the usual risk factors at the neighborhood level. By exploring multiple outcomes among adolescents and protective and risk features of the neighborhood environment, this paper should provide additional insight to how context matters for youth.

Background
Multiple aspects about neighborhoods have been linked to individual health and risk outcomes. Such ecological development frameworks emphasize that concurrent features of neighborhood disadvantage and instability are associated with problematic individual behaviors through mechanisms of social resources, social control/collective socialization, modeling, and stress (Jencks and Mayer, 1990; Massey, 1996; Shaw and McKay, 1942; Wilson, 1996). The general framework argues that disadvantaged and unstable neighborhoods have fewer resources, employment opportunities, formal and informal forms of social control and monitoring, and overall less collective efficacy than advantaged and stable neighborhoods and that such surrounding disorganized context may be associated with more opportunities to engage in risky behaviors (Bursik and Webb, 1982; Elliott et al., 1996; Sampson and Groves, 1989). Moreover, social environmental factors can be thought of as chronic stressors that can affect health directly or act to diminish the effects of protective factors. Certain conditions, such as neighborhood economic disadvantage and residential instability, influence the type and level of stress exposure and available resources for coping. Following Masey (1996) and Wilson (1996) disadvantage and instability are important neighborhood conditions; they also represent a theme across neighborhoods studies. Urban disadvantaged neighborhood may be highly stressful to residents including children (Attar et al., 1994). Poverty (Schulz et al., 2000) and social disorganization (Latkin and Curry, 2003) are may be especially harmful to mental health. Overall, we approach the study with a general frame that suggests key features of neighborhood context may act as direct stressors (directly or via exposure) that may have an influence the health of adolescents.

These neighborhood deficits or stressors are purported to be related to a variety of problem behaviors among neighborhood inhabitants including increased crime, disorder and violence (Kubrin and Herting, 2003; Miethe & McDowall, 1993; Miles-Doan, 1998; Morenoff et al., 2001; Sampson et al., 1997; Skogan, 1990), poor adult health (Browning and Cagney, 2003;

Robert, 1998; Ross, 2000) and substance use for adults (Boardman et al., 2001; Galea et al., 2003; Silver et al., 2002). However, others raise doubts about the direction and universal impact of neighborhoods on all drug types (Ford and Beveridge, 2006; Schroeder et al., 2001; Sunder et al., 2007). Neighborhood research examining the outcomes of mental health for adolescents (Aneshensel and Sucoff, 1996; Perez, et al., 2002) and juvenile delinquent rates (Coulton et al., 1995) have typically shown effects consistent with the general social disorganization framework. However, research focused on early negative behavioral (i.e., behaviors that may be characterized by initiating) or emotional outcomes has provided less consistent evidence (Leventhal and Brooks-Gunn, 2000). While direct neighborhood effects have been tied to adolescent substance use outcomes (Crum et al., 1996; Hoffmann, 2002), not all studies have shown significant effects (Allison et al., 1999; Fuller et al., 2005; Kulis et al., 2007) or directions (Chuang et al., 2005; Hoffmann, 2002) of effects that are entirely consistent. Overall, the picture of the impact of neighborhood disadvantage and instability seems less clear for adolescent substance use than for adults or other adolescent outcomes.

In addition to this neighborhood disorganization/stress framework, research has also looked at direct opportunities, both positive and negative, that are part of the spatial context. Specific to alcohol use, measures of alcohol accessibility and outlet density are linked to various problematic drinking-related behaviors (Kuntsche et al., 2008; Treno et al., 2003). Like access to negative opportunities, neighborhoods also provided access to services and resources that may protect against adolescent risk behaviors through involvement, modeling or other associated mechanisms. Such services and resources include libraries, churches, community centers, or youth focused services (e.g. Boys and Girls clubs). Minimal research specifically focuses on the role of protective neighborhood factors on adolescent behaviors; rather the research highlights the risk of neighborhood social disorganization. This proposal brings both aspects of context together in assessing various health and risk outcomes. Of those studies that are directly interested in adolescents at the individual- or neighborhood-level there is no study to date that examines neighborhood disadvantage, instability, crime, alcohol availability and neighborhood services and resources at both the individual and neighborhood-level within a rich multilevel model.

Sample and Measures
Data for this paper are from adolescents in the Seattle metropolitan area from 1998 to 2003. Student home addresses from the individual-level dataset are geocoded and spatially linked to the appropriate census tract. The Reconnecting Youth (RY) prevention research project is a random sample of high school youth (aged 14 – 19) stratified on school performance; low performers were over-sampled. Sixteen high schools in the Seattle and surrounding school districts participated in health/drug use interventions and/or surveys over the period. All participating youth were assented and parents provided consent in accordance with approved UW IRB protocols. In total, 2006 individual respondents are included in the combined dataset and over 130 census tracts are represented in the data.

All outcomes and individual level independent variables come from the Reconnecting Youth High School Questionnaire (HSQ), a detailed self-report questionnaire capturing a range of youth behaviors including substance use, peer and family relations, and school behaviors. Separate scales of *depression*, *anxiety*, *hopelessness*, and *suicide risk* behaviors (attempts,

threats, and ideation) are created. The scales have reliabilities between .80 and .89 across different surveys. We assess three separate categories for frequency of substance use during the past month: a*lcohol* (beer, wine and hard liquor); *marijuana*; *illicit drugs* (cocaine, opiates, depressants, tranquilizers, inhaled substances, stimulants, and over the counter drugs). A cumulative scale of overall drug involvement will also be included (Drug Involvement Scale for Adolescents; Herting et al., 1996). Three separate delinquency (substance use assessed separately) measure include *assault*, *theft*, and *police contact* and one composite measure. We explore measures designed to capture psychosocial risk and protective factors: *personal control*, *family support*, and *deviant peer bonding*. We include controls for age, sex, race, high risk for school dropout, high school change, family structure and parent's educational attainment.

Following the research on neighborhood analysis, the contextual data in this project are operationalized at the census tract level, block level (Billy and Moore, 1992; Crane, 1991; Ku, Sonenstein, and Pleck, 1993) and distance measures based on individual's geographic location. At the neighborhood level, data are compiled from the 2000 U.S. Census (e.g., economic indicators), Seattle Police Department (crime data), Washington State Liquor Control Board (alcohol availability), and City of Seattle (neighborhood services and centers). Individual distance measures to alcohol outlets (Pollack et al. 2005; Treno et al., 2001) and positive neighborhood resources will be calculated reflecting the nearest distance from establishment type from a respondent's home as well as the total number alcohol establishments or positive neighborhood resources within ½ mile radius of the respondents' home (attempting to reflect walking distance within the immediate environment). Measures of neighborhood risk characteristics are designed primarily to represent economic disadvantage and instability in the neighborhoods as represented by the census tract unit. We have basic measures from the US Census: poverty and income measures, unemployment, residential stability, female-headed households, racial/ethnic composition and segregation, have local Seattle crime rates record by tract, and counts and density of alcohol outlets. We will use separate indicators as well as creating a composite measure to represent *Neighborhood Disadvantage* based on a scale constructed by Sampson and collaborators. (1997). This index is composed of a mean of four indicators of economic disadvantage at the census tract level: percentages of residents below the federal poverty level, households headed by a female, residents receiving public assistance, and residents aged 16 years or older that are unemployed (Cronbach's Alpha = 0.82).

Statistical Approach
The analysis focuses on the influence of the surrounding neighborhood context for individual's mental health, substance use and delinquency. Multilevel techniques (hierarchical linear models-HLM) will be used to assess the impact of context on adolescent health and risk behaviors. A hierarchical model explicitly incorporates variables at the individual-level and at the aggregate-level and accounts for the clustering of individuals in aggregate unit. HLM allows key parameters of interest at the individual level to vary across local contexts and our interest is to see if this variation is systematically associated with neighborhood factors (Raudenbush & Bryk, 2002; Snijders & Bosker, 1999). We will assess direct and moderating influences on context – both positive and negative – on three categories of behaviors. Specifically, we investigate the influence of neighborhood risks (disadvantage, instability, crime, and alcohol/substance access) and resources (libraries, churches, community centers, Boys and Girls clubs, and parks) on emotional distress, substance use and delinquency among youth. First, we examine if

neighborhood contextual variables have a significant direct effect on predicting adolescent behavioral outcomes over and above the effects of individual, family, and peer factors with which use is known to be associated. Second, we test if neighborhood contextual variables have significant moderating effects on individual protective arenas (personal and social resources) and individual risk factors (deviant peers) expected to be related to substance use. Our interest is not in testing these specific protective and risk mechanisms found in the literature (or the theoretical perspectives from which they are derived) but rather to see if their respective influences on outcomes vary across neighborhood conditions and by type of behavior. Focusing on both risk and protective factors of neighborhood conditions on youth health and risk behaviors, while controlling for key individual factors, should shed light on the possible mechanisms by which neighborhoods shape behavior.

Discussion
Preliminary analyses reveal that neighborhood alcohol availability and disadvantage have negative direct effects not consistent with typical neighborhood disorganization or environmental stress frameworks. Adolescents living in neighborhoods with high levels of alcohol outlets or economic disadvantage neighborhoods have lower rates of alcohol use. Beyond neighborhood direct effects we found that the deviant peer measure moderates neighborhood effects. Deviant peers increase substance use, but the effect is reduced for adolescents living in areas with higher than average neighborhood disadvantage. That deviant peers have less of a positive effect on adolescent substance use in disadvantaged and unstable neighborhoods is puzzling. According to a social disorganizational framework, adolescent in more disadvantaged and unstable neighborhoods face a multitude of risk factors. Given the set of risks associated with this neighborhood type and the greater number of negative influences it may have, deviant peers may not be as important in encouraging or providing opportunities for using illegal substances. Examining mental health measures revealed that emotional distress among adolescents is directly (and positively) related to neighborhood disadvantage. Adolescents living in neighborhoods with high levels of disadvantage neighborhoods have higher rates of emotional distress. Also, found were moderating effects of both neighborhood instability and disadvantage on effects of parental support/family functioning and peer behaviors. Additional analyses on delinquent measures will further clarify these findings. Next, we will include neighborhood protective factors as additional neighborhood context to see if there are any direct or moderating effects of positive features of the neighborhood on any of the outcomes and whether this alters the preliminary findings.