CONTEXTUAL AND GEOGRAPHICAL INFLUENCES ON HIGH SCHOOL DROPOUT

by

HEIDI EHRENREICH

(Under the direction of Pamela Orpinas)

ABSTRACT

The purpose of this research is to examine the contextual influences on a youth's decision to drop out of high school based on characteristics of place and family. I hypothesized that features of the built and social environments, i.e. aspects within neighborhoods and among family members, would distinguish individual academic outcomes. The research consisted of two studies. Each study examined youth who took part in the *Healthy Teens Longitudinal Study*, a CDC-funded study (2002-2009) which sought to increase understanding of risk and protective factors that influence trajectories of problem behaviors from middle to high school. The sample for Study One consisted of approximately 600 randomly selected *Healthy Teens* participants; the sample for Study Two consisted of 176 *Healthy Teens* participants at high risk for aggression, and their parents or caretakers. Study One provided some support for the hypothesis by finding higher neighborhood disadvantage and structural disrepair in neighborhoods of dropouts. The findings from Study Two were more ambiguous. The influence of a family's social processes over time, as measured through family social capital, distinguished the value youth placed on academic achievement but did not improve grades or decrease the likelihood that they would drop out of high school. The studies used multiple methods (observations, surveys, and GIS) and sources of data (census, geocoded addresses, youth, parents, and archival) to draw inferences. In

future, a mixed-methods approach using qualitative reports of youth, parents, and residents could elucidate the processes of how they relate to their neighborhood and social environments in ways that would affect a youth's academic outcomes.

INDEX WORDS: Neighborhood disadvantage, Dropout, Family social capital, Group-based modeling, PROC TRAJ, Aggression, Geographic Information System, Social observation, Institutional resources, Academic achievement, Parental structure, At-risk youth

CONTEXTUAL AND GEOGRAPHICAL INFLUENCES ON HIGH SCHOOL DROPOUT

by

HEIDI EHRENREICH

B.A., Amherst College, 1991

M.P.H., The University of Georgia, 2008

A Dissertation Submitted to the Graduate Faculty of The University of Georgia in Partial Fulfillment of the Requirements for the Degree

DOCTOR OF PHILOSOPHY

ATHENS, GEORGIA

2011

CONTEXTUAL AND GEOGRAPHICAL INFLUENCES ON HIGH SCHOOL DROPOUT

by

HEIDI EHRENREICH

Major Professor: Pamela Orpinas

Committee: Marsha Davis
Xiao Song
Xiaobai Angela Yao

Electronic Version Approved:

Maureen Grasso
Dean of the Graduate School
The University of Georgia
December 2011

DEDICATION

This dissertation is dedicated to my father, whose lifelong love for learning and insatiable curiosity inspired me to pursue learning out of sheer enjoyment.

ACKNOWLEDGEMENTS

While writing is a lone undertaking, this dissertation is the product of many people's efforts. First, I'd like to thank my committee members who took the time to bury themselves in the subject matter for the sake of providing me with suggestions and answers. At each encounter, I gained from their insights and approaches to the problem.

My family is deserving of my full appreciation in so many ways. My husband Michael has provided steady moral and logistic support, so critical for holding the family together. My children, Vivian and Kasey, have stood by me throughout, enquiring about the process and always offering sincere words of encouragement. My mother has been unwavering in her readiness to help in any way possible. To each of these people, I deeply thank for being there.

No doubt, the person I most owe for the success of completion is my advisor, Pamela Orpinas. Over the years, she has tirelessly corrected, guided, and supported my research. Her ability to mentor is only surpassed by her passion as scholar. I feel fortunate and grateful to have had the opportunity to work with her and, in the process, have gained a friend.

There are many professors and fellow students who have contributed to my learning through discussions in and out of the classroom, meetings and at work. I cherish the people I work with at the Violence Prevention Workgroup. While they're not mentioned individually, I can sincerely say that each has touched me in some way, personally and academically.

Finally, I would like to thank Betty Blum and Marsha LeCroy, who through their administrative finesse and technical understanding have made an otherwise daunting process easier to navigate.

TABLE OF CONTENTS

Page

CHAPTER 1

INTRODUCTION

This study examines contextual, geographical, and family influences on high school dropout, a turning point in youth development. Students who drop out generally have poorer employment opportunities and lower earnings (Rumberger, 1987; Rumberger & Lamb, 2003), are more likely to become teen parents (Kirby, 2002; Manlove, 1998), and have higher criminal involvement (Christle, Jolivette, & Nelson, 2005; Thornberry, Moore, & Christenson, 1985). From a developmental perspective, youth who drop out of school have fewer social support and guidance opportunities in their path to adulthood (Croninger & Lee, 2001).

The context of where youth live matters to their development but remains poorly defined. The decision to drop out of high school, a likely consequence of accumulated life events, is more likely to take place within an environment characterized by poor safety, low access to resources, poorly constructed physical structures, and few positive social interactions (Aisenberg & Herrenkohl, 2008; Daly, Shin, Thakral, Selders, & Vera, 2009; Emory, Caughy, Harris, & Franzini, 2008). Features within a youth's neighborhood give clues about the extent of transportation available, quality of the home's surrounding, and degree of safety that can potentially impact a youth's learning environment. Operating within neighborhood environments are families, which can exercise a mediating influence on a child's school engagement and performance (Battin-Pearson et al., 2000; Ensminger & Slusarcick, 1992). This research explores neighborhood and family environments to understand better how these contexts might increase risk or promote positive development among youth.

Implications of an exploratory analysis of a youth's environment are manifold. Local policymakers have direct influence on urban development through neighborhood revitalization projects, while other community leaders, such as school superintendents and health officials, can use neighborhood contextual information for increasing youth involvement in after-school activities, physical activity, and educational learning opportunities. To do this, however, officials require information about existing features of neighborhood, which can function as "external assets" for positive youth development in the form of community support structures (Leffert et al., 1998). As researchers, it is essential to broaden understanding of neighborhood characteristics, which are often linked to levels of neighborhood disadvantage (Battin-Pearson et al., 2000; Ensminger, Lamkin, & Jacobson, 1996), to encompass underlying collective social processes that can positively influence individuals (Emory et al., 2008; Leventhal & Brooks-Gunn, 2000; Sampson, 2001).

Parent study: Healthy Teens Longitudinal Study

The parent study for the present research is *Healthy Teens Longitudinal Study*. Funded by the U.S. Centers for Disease Control (CDC), *Healthy Teens* consists of a cohort of approximately 700 students followed from middle school through high school (2002-2009). The students attended one of nine middle schools that fed into eight high schools within six counties in Northeast Georgia. In middle school, students initially took part in the *Multisite Violence Prevention Project*, a study seeking to examine the effects of two school interventions on reducing aggression and violence among youth in Grade 6 (Multisite Violence Prevention Project, 2004). The selection of study participants occurred through two sampling procedures: a large, random sample of students (defined as universal sample) and a smaller, high-risk sample of students who were nominated by teachers as high in aggression and influential among peers

(defined as targeted sample). For the *Multisite Violence Prevention Project* and subsequent *Healthy Teens* study, youth participants completed annual surveys, from Grades 6 through 12, on a number of violence-related behaviors (aggression toward peers, substance use, delinquency, dating violence, and suicidal thoughts and plans). Parents or caretakers of youth in the high-risk sample completed surveys in middle school only. Adults and youth reported on risk and protective factors in multiple domains: peer, school, family, and neighborhood. The objective of *Healthy Teens* was to increase understanding of the risk and protective factors that influence developmental trajectories of problem behaviors among youth. As a mixed-methods study, *Healthy Teens* research staff gathered student surveys, teacher reports, and archival data, as well as conducted interviews and focus groups with participating students.

Research Aims

The purpose of this research is to examine the neighborhood and family characteristics of youth who dropped out of school and of those who graduated from high school. The research consists of two studies.

Study 1examined the physical and social neighborhood environments of all *Healthy Teens* participants in terms of advantage, access to educational and social resources, and observable quality. Using neighborhood measures derived from census data, institutional addresses, and neighborhood observations, I examined the relation between neighborhood context and academic success, mainly high school dropout.

Study 2 only examined the high-risk sample of youth and had three objectives. First, I identified and described the trajectories of family social capital among these youth and tested whether changes in parental structure affected their paths. Second, I examined whether academic performance outcomes differed by family social capital trajectory group. Third, I

explored differences in neighborhood characteristics and the number of residential moves by trajectory group.

The ultimate aim of the research is to develop a better understanding of contextual factors and how they interrelate to affect youth development. The results of the investigation may serve towards developing more targeted interventions at multiple levels: the individual, family, and neighborhood.

CHAPTER 2

REVIEW OF THE LITERATURE

This chapter consists of four sections: significance, innovation, risk and protective factors of dropout, and theoretical models. In each section, the problem of dropout is framed within the context of findings from past studies and theoretical considerations. Further, the study of risk and protective factors of dropout is examined at the individual, peer, family, school, and neighborhood levels. The review highlights several gaps in the research and the need for further innovative research to better understand and improve high school graduation rates.

Significance

This study strives to unite our current understanding of the complexities that lead to high school dropout by identifying and assessing contextual domains that underlie youth development. A contextual analysis is important for exploring disparities experienced by youth and their families in academic and health outcomes. A focus on place raises several questions about how a neighborhood is defined and measured. Methodologies, such as GIS techniques and observational methods, aid in these efforts. However, a contextual approach challenges researchers to create a heuristic that can isolate the effects of neighborhood as distinct from individual characteristics.

Until now, research on student academic outcomes has centered on the school and family contexts. School climate (safety, teacher support, and student delinquency) and organization (staff resources and classroom size) were shown to affect school attendance and academic success (Birnbaum et al., 2003a; Bowen, Rose, Powers, & Glennie, 2008). Researchers have

also emphasized opportunities for prosocial involvement, which can foster school attachment and bonding with school and peers through involvement in youth programs (Catalano, Haggerty, Oesterle, Fleming, & Hawkins, 2004b). The effectiveness of many of these youth programs has been inconclusive, however. In a meta-analysis of twenty-five youth programs carried out within school and/or family domains, researchers found mixed results for effects on school commitment and academic achievement (Catalano, Berglund, Ryan, Lonczak, & Hawkins, 2004a), possibly due as much to flaws in measurement or study design that might not capture the changes, as to program content itself. In an effort to hear the perspectives of students, researchers, funded by the Bill and Melinda Gates Foundation, interviewed students who had dropped out and were living in the Philadelphia and Baltimore areas (Bridgeland, DiIulio, & Morison, 2006). Based on findings from four focus groups and 467 individual interviews, researchers identified several factors within school (lack of connection to school, boring classes, loose academic policies) and family (lack of involvement by parents in schools, lack of parental support) that contributed substantially to the decision to drop out. In another study, school staff from elementary and secondary schools ranked parent support, academic success, social skills, and school attendance as the most salient factors for school completion (Hunt et al., 2002). Indeed, in a national study of 2002 dropouts, English teachers correctly predicted over a third (34%) of those students by sophomore year who would eventually drop out two years later (Dalton, Glennie, & Ingels, 2009). However, from an alternative perspective, this percentage also reveals that teachers are *failing* to predict almost two-thirds of the students who would drop out. A rather high proportion of students who are not being identified implies the existence of other factors that must be relevant to the dropout process. This present research seeks to identify what features within the community and family contexts might be relevant and, more

importantly, how they might relate to a youth's decision to drop out, based on theoretical frameworks.

As a measure of a neighborhood's social, economic, and structural organization, a contextual analysis reflects the degree to which an individual has access to existing resources. A youth's, family's, or even neighborhood's differential access to resources – whether financial, instrumental, or social – can have implications on the opportunities an individual has in engaging in voluntary, structured activities, which provide fertile ground for positive youth development (Larson, 2000). In a recent report on social determinants of health, the World Health Organization (2008) noted that "urban planning…that produces sprawling neighborhoods with little affordable housing, few local amenities, and irregular, unaffordable public transport does little to promote good health for all." From this perspective, dropout is a manifestation of unequal distribution of resources within the community.

Dropout also draws concern from the field of public health (Freudenberg & Ruglis, 2007). The mortality rate in 1999 among dropouts ages 25 to 64 was twice as high as for people with some college education (Cutler & Lleras-Muney, 2006). As a component of socioeconomic status, education paves a pathway that determines levels of access to health resources and information (Adler & Newman, 2002). Better-educated persons can more readily access health information, perhaps related to the higher level of resources available through better employment than their less-educated counterparts. State policymakers in Georgia have recognized the connection between education, at the earliest age, and health through its exemplary Bright from the Start program (Low, Low, Baumler, & Huynh, 2005). Created in 1992, Bright from the Start considers child care, early education, as well as child and adult nutrition needs, as requisites for success. Not surprisingly, education level comes to bear on future economic living and working

conditions, as well as levels of social resources, that can increase opportunity for engaging in risk behaviors (Ross & Wu, 1995). Yet the effects of education on health do not necessarily operate on income alone (Cutler & Lleras-Muney, 2006). Schooling also increases a youth's academic and social competence, significant predictors of healthy decision-making and lifestyle choices.

Graduating from high school has the potential to build social ties for youth within a network that reaches beyond his or her immediate surroundings. Considered a form of social capital, a diverse web of social relationships forms around students, consisting of teachers, peers, and other adult role models (Croninger & Lee, 2001). These ties are activated when a person seeks employment, needs social support, or relies on instrumental support (Macinko & Starfield, 2001). The notion of social capital might imply a protective effect, but the nature of the relationships within social networks can make a difference in whether positive strides are made. The types of ties that people form with others are typically distinguished as being weak and "bridging," or stronger, "bonding" ties (Putnam, 2004). With bridging ties, people (or communities) form connections across social groups, which can generally help with getting ahead; bonding ties serve more for daily functioning within closer groups. In a longitudinal study examining neighborhood predictors of dropout, the risk of dropping out was markedly higher among black males than among black females when neighborhood disadvantage increased (Crowder & South, 2003). Yet, the social networks formed through moves to highly disadvantaged neighborhoods were shown to increase social contact and cohesion among males, possibly through gang membership. In such a case, gangs might represent bonding ties for the members but also fewer bridging ties to other members of society.

As a public health surveillance strategy, the use of geographic information systems (GIS) has enabled researchers to expand their understanding of place. By geocoding individuals, researchers have been able to identify patterns, or clusters, of health outcomes, ranging from alcohol-related problems, cancer incidence, and teenage pregnancy rates, to obesity, and cardiovascular disease (Diez-Roux et al., 2001; Gordon-Larsen, Nelson, Page, & Popkin, 2006; Lipton, Gorman, Wieczorek, & Gruenewald, 2003). GIS software can also help define areas of interest. In a particularly innovative approach, Kruger, Reischl and Gee (2007) used GIS mapping techniques to define neighborhoods based on "buffer zones" surrounding a person's home. The researchers designated zones consisting of a 0.25 mile radius around a person's home to be used for measuring neighborhood deterioration; a 1 km radius was used for measuring commercial deterioration. Similarly, Bass and Lambert (2004) demonstrated a clustering of like individuals – the premise of a neighborhood – through "variograms," i.e. visual clusters indicating spatial correlations. By analyzing spatial dependence, Bass and Lambert could show that adolescents who lived closer together also shared similar perceptions of neighborhood. Still, this geographical approach did not successfully differentiate areas by perceived safety. In fact, the juvenile arrest rate, a census-tract variable, proved the only statistically significant neighborhood-level variable on perceptions of neighborhood disorder.

A form of direct observation, systematic social observations (SSO) is a method increasingly used to shore up gaps in environmental information. While praised by some as an economical and efficient method of collecting environmental data (Caughy, O'Campo, & Patterson, 2001), SSO can consist of neighborhood checklists (Zenk, Schulz, House, Benjamin, & Kannan, 2005a), videotaped drive-bys, and observer logs (Sampson & Raudenbush, 1999) that can comprehensively capture many of the social interactions and processes not otherwise found

in administrative data, such as census or police records. It is important to note that the reliability and validity of this method has shown mixed results. For a neighborhood observational checklist developed by Zenk et al. (2005b), one study found modest to high test-retest reliability (.52-1.00) for items relating primarily to land use, and commercial and residential structures; poor test-retest reliability was found for less stable characteristics, such as noise and strewn garbage (Zenk et al., 2007). Tactics, such as coder training and principal components analysis, have been employed to increase and confirm SSO measure reliability, respectively (Sampson & Raudenbush, 2004).

The drive to associate aspects of the physical and social environment to youth outcomes is supported by a conviction that compositional and contextual effects are distinct. In other words, the neighborhood context has a measurable effect on academic success beyond the individual-level characteristics of those who live in proximity to one another (composition). This approach, however, has met with criticism for failing to measure an individual's health, academic outcome, or even socioeconomic status, as separate from – and not a product of – a person's environment over time (Macintyre, Ellaway, & Cummins, 2002). In fact, Macintyre et al. flatly claimed that research on place effects can default to a "black box" for describing any unspecified residual influences on health once individual characteristics have been accounted for. The missing link in this scenario might, however, be in identifying not a distinct relation of exogenous factors to individual outcomes but in measuring the underlying processes. When assessing the practical implications of this more nuanced approach, Kawachi and Berkman (2003) concluded: "While policy makers may wish to know whether they should intervene on people *or* the places where they live, very likely the correct answer is: both." (p. 12).

Innovation

The goal of the research is to identify and explore the influence of neighborhood effects on youth dropout. This type of contextual analysis benefits both researchers and practitioners committed to exploring risk and protective factors beyond the individual, and ultimately preventing dropout among youth. A contextual analysis has the potential to highlight disparities in dropout among youth, reinforce the multi-disciplinary nature and prevention of dropout, validate new methodological approaches to the study of ecological risk factors, and refine conceptual frameworks that include contextual components into research models.

Practitioners serving to improve the lives of youth need to understand the contextual nature of dropout, in terms of accessibility, to intervene more effectively. Accessibility to health-promoting resources and environmental features underscores much of the current research agenda in areas, such as violence prevention, obesity prevention, mental health determinants, urban improvement, and anti-poverty initiatives (Evans, 2003; Jackson, 2003; National Center for Injury Prevention and Control, 2009; O'Connor, 2001). This study is one of the first to explore the relationship of neighborhood environmental determinants on dropout.

A contextual approach needs to be integrated into existing theoretical models, regardless of any single disciplinary outcome. Shifting from an investigation of individual to ecological mechanisms, researchers in public health reach out to disciplines not traditionally associated with the health field. Schulz and Northridge (2004), for example, collaborated with urban planners and sociologists to develop a model to explain racial disparities in health promotion and environmental planning (Northridge, Sclar, & Biswas, 2003). Considering the realities of “urban morphology,” the authors placed the natural environment at a fundamental, macro level and the built environment at an intermediate, community level. They hypothesized that features of the

built environment affected the degree of stressors, health behaviors, and levels of social integration and social support, which would, in turn, affect health and well-being. They conceded that elements within the built environment could modify more remote contexts, such as the natural environment or income and resource distributions, distinctly aware of the bidirectional influence of these adjacent categories. This type of conceptual model is missing from education research.

For these various fields of research, using the appropriate methodology is critical for understanding the role of environmental determinants on individual outcomes. For this reason, this study examines the topological relationships between individuals as a "spatial epidemiological" approach to exploring the physical environments of adolescents who drop out. In essence, the environment is defined by spatial relationships between individual students and institutional resources which surround their homes, as well as the students' location in disadvantaged neighborhoods. Mapping individuals and environmental features, GIS enables spatial patterns to emerge that do not necessarily fall into pre-defined boundaries of county or school district lines (Cromley & McLafferty, 2002). In this way, dropout is understood through its clustering effects across administrative boundaries. A GIS approach is particularly useful for exploring non-urban areas as well. GIS applies individual-level data for mapping "outbreaks" of a condition, such as dropout, that can be large relative to the geographic area under review (Cromley & McLafferty, 2002). In other words, areas marked by low population densities might mask the ability to detect any associations between youth outcomes and aspects of their environment. This project assesses the environments of twelve contiguous Georgia counties characterized by pockets of low population density. An exploratory spatial analysis can

highlight areas where students who drop out live, which might otherwise go unnoticed based on population count data alone.

Risk and protective factors of dropout

This section examines predictors of dropout and factors that promote positive outcomes within the contexts of the individual, peers, family, school, and neighborhood. Within each domain, areas in need of further research are highlighted. The section concludes with a discussion about particular methodological challenges of neighborhood effects research.

Individual

Several factors over the lifetime of a youth can contribute to the decision to drop out. Individual characteristics that have differentiated students who drop out versus stay in school have been lower IQ scores, higher aggressive behaviors, and being older than peers (Barrington & Hendricks, 1989; Cairns, Cairns, & Neckerman, 1989), with some of these characteristics being identified as predictors of dropout as early as elementary school (Jimerson, Egeland, Sroufe, & Carlson, 2000). Internal cognitions play a strong role in how students perform academically and relate to others. Finn (1989) has linked how involved a student felt with school to "perceptions of congruence." This simply meant that students felt more connected, or in congruence, with an external object (school, group, etc.) based on their perceptions of shared values and beliefs with others, which ultimately impacts academic performance. Along these lines, Lan and Lanthier (2003) found that perceptions of self (academic self-esteem), perceived relationships with teachers, and perceptions of school all declined significantly between 8th and 12th grades among a sample of 1,327 students who dropped out from public or private schools across the United States. The cognitive paths that mediated the connection between these perceptions of the environment and a youth's academic self-esteem, however, were less clear.

Peers

The type of interpersonal relationships that children have with peers can shed light on the paths they might follow. Based on teacher evaluations of peer-to-peer relationships, Farmer et al. (2003) found that teacher-perceived low popularity and aggressiveness in children at Grade 7 predicted early dropout, although the degree of aggressiveness combined with social isolation heightened the risk of dropping out. Affiliation with deviant peer groups possibly affects how connected the youth feel to the school or how excluded youth become from social activities, factors leading to a "process of disengagement" that can end in dropout (Finn, 1989). While poor social experiences generally had no effect, association with deviant peers showed a strong relationship with school disengagement (Vitaro, Larocque, Janosz, & Tremblay, 2001). Paradoxically, having no friends can also indicate risk in engaging in problem behaviors. Studies have shown that youth with high aggressive trajectories also experienced higher levels of peer rejection as early as first grade (Schaeffer, Petras, Ialongo, Poduska, & Kellam, 2003). It is important to note that these children who display early forms of highly aggressive behaviors can also have co-morbid neuropsychological disorders, such as attention deficits and learning disabilities, which can negatively impact their academic performance, making them more likely to drop out (Mash & Barkley, 2003). As with all contextual associations, the direction of effect is not clear: either deviant peers exert a negative influence or youth seek out these types of friends based on similar antisocial views.

Family

The role that families play in the process of a child dropping out of school cannot be underestimated (Spencer, 2001). Harsh and inconsistent parenting is strongly related to a child's deviant peer affiliations (Brody et al., 2001), violent and externalizing behaviors (Galambos,

Barker, & Almeida, 2003; Simons et al., 2006), and substance use (Cleveland, Gibbons, Gerrard, Pomery, & Brody, 2005). Families also comprise a structural foundation for healthy child development. A mother's higher level of education, higher socio-economic status, and two-parent households increased the chances of graduating from school (Ensminger & Slusarcick, 1992). Controlling for family income, however, attenuated the impact of mother-only households on dropout (Pong & Ju, 2000). Another influential family characteristic is involvement in religious institutions. Attending religious services regularly, in this case considered a family attribute, was shown to have positive effects on a child's academic outcomes (Coleman, 1988; Muller & Ellison, 2001). Yet the extent that nurturing parenting might buffer the negative influences of deviant peer behaviors (Galambos et al., 2003) or disadvantaged neighborhoods (Dorsey & Forehand, 2003; Grant et al., 2003) is still subject to research on possible indirect pathways.

School

Aspects of the school environment unquestionably play a significant but lesser defined role in the decision of students to drop out, with school and teacher characteristics acting as both risk and protective factors (Croninger & Lee, 2001; Ehrenberg & Brewer, 1994; Lee & Burkam, 2003; Rumberger, 1995). In a school-wide assessment of salient variables related to school completion, school staff from elementary and secondary schools identified individual (academic success, social skills) and family (parent support, and school attendance) variables as most relevant, with little emphasis on structural aspects (Hunt et al., 2002). To evaluate the school environment, Birnbaum et al. (2003b) created a school functioning index to measure school resources, performance, and stability. The purpose of this school functioning index was to predict health-risk behaviors in middle school based on high or low index values. In another

study examining the effect of school-level factors on individual health behaviors in Belgium, Maes and Lievens (2003) found that only one aspect, the school policy on rules, had a significant effect on smoking behaviors among students. Fitzpatrick (1992) noted that increases in educational spending, effectively resulting in lower pupil-teacher ratios, had the largest indirect effect on decreasing dropout rates. Teachers with a master's degree or ten or more years of teaching experience, were also associated with higher gain scores and lower dropout rates among African Americans (Ehrenberg & Brewer, 1994). From a school organizational perspective, Lee (2003) found that students were more likely to remain in schools with fewer than 1,500 students and those offering mainly academic courses rather than nonacademic courses.

Neighborhood

Neighborhood disadvantage has consistently been linked to poor youth outcomes. Studies have shown that neighborhood poverty was predictive of persistent delinquency (Stouthamer-Loeber, Loeber, Wei, Farrington, & Wikstrom, 2002), aggressive behaviors (Hart & Marmorstein, 2009), and dropout (Crowder & South, 2003; Ginther, Itaveman, & Wolfe, 2000; Vartanian & Gleason, 1999). In fact, among a sample of 13-19 year-olds, Stouthammer-Loeber et al. (2002) found children from disadvantaged neighborhoods were over three times more likely (OR=3.30; 95% CI 1.84, 5.93) to engage in delinquency than children from non-disadvantaged neighborhoods. Findings of neighborhood's effect on academic achievement, however, have varied considerably, from a 20% higher odds of dropping out among youth living in the 90th percentile of neighborhood impoverishment (Crowder & South, 2003) to no significant effect found for neighborhood economic impoverishment on math pass rates (OR=1.80; 95% CI 0.89,3.64) or reading pass rates (OR=1.75; 95%CI 0.86, 3.54), once neighborhood social processes were accounted for (Emory et al., 2008). Sources of differences

in effect size across studies might result more from variable selection than the measures themselves. For measuring neighborhood disadvantage, researchers have generally created census -derived index scores using principal component analysis or some other composite scoring method. Despite a lack of consensus on which items to use – items can vary from neighborhood poverty rate to parental educational attainment and head of household – these indexes credibly stand as a proxy for neighborhood wealth. Instead, differences in effect sizes might be attributed to measures of additional neighborhood variables as sources of variance. Using this rationale, Emory et al. (2008) speculated that an unexpected association found between high fear in the neighborhood and positive academic achievement might have resulted from unmeasured protective factors that would buffer the effects of fear perceptions.

The neighborhood is also characterized by how the people who live there relate to one another. Studies have linked collective efficacy, as measured by the degree of social cohesion and trust among residents, and social capital, conceptualized as the network of relations that can foster social norms and mobilize its members (Putnam, 2000), to adolescent delinquency (Sampson, Raudenbush, & Earls, 1997), crime (Gottfredson & Hirschi, 1990) and academic outcomes (Dika & Singh, 2002). Others have proposed that neighborhoods fall prey to the "epidemic" effect of negative peer influences in explaining why youth from a similar area tend to drop out (Crane, 1991; Jencks & Mayer, 1990). While the type of interactions that youth have with adults and peers no doubt matter to how engaged students are with school (Dika & Singh, 2002), less is known about what neighborhood features might promote these relationships and how.

Several problems hound neighborhood effects research, relating predominantly to distinguishing the effects of family covariates from neighborhood covariates (Dietz, 2002).

When assessing neighborhood effects, the choice of neighborhood might be based on family characteristics, such as income or parent's perceptions of the neighborhood (as safe, close to high performing schools, etc.). A similar issue concerns omitted variable bias (Duncan & Raudenbush, 2001; Leventhal & Brooks-Gunn, 2000). Omitted variable bias occurs in regressions where unobserved covariates go unaccounted for and bias parameter estimates of the observed covariates included in the model. Attributing observed characteristics from one level, such as the neighborhood, to another level, such as family, can decrease the relevance of family characteristics. Harding (2003) confronted this problem in a study estimating neighborhood effect on teenage pregnancy and dropout. Based on a sensitivity analysis, Harding showed that youth can be compared across neighborhoods when controlling for varying levels of a covariate relevant to the outcome. Results from the study showed that when two groups of children, matched on observed characteristics at age 10 (family income, parent education, receipt of public assistance, and family structure), experienced different neighborhood contexts when growing up, those children in high-poverty neighborhoods were more likely to drop out than those in low-poverty neighborhoods. Among non-African-American youth, a high-poverty neighborhood almost doubled the odds of dropout.

The best methods for analyzing ecological variables are subject to debate. While multilevel modeling is generally accepted as the most appropriate approach for understanding place effects (Pickett & Pearl, 2001) and the effects of social capital (Wood & Giles-Corti, 2008) on health, it is not yet clear how interpretable the results are. In a study by Bowen et al. (2008), for example, a negligible intraclass coefficient (ICC) value for explaining school-level effects indicated that the school's environment had almost no effect on explaining outcomes of school engagement, school trouble avoidance, and grades. Responding to the issue of very small

resulting ICC values, Larsen and Merlo (2005) have proposed an alternative use of median odds ratio (MOR) and the interval odds ratio (IOR) for interpreting the specific effect of place-level variables. Through the use of multilevel logistic regression, a MOR is calculated to express the difference in propensities for persons from two different geographic areas to have a particular outcome, given similar covariate characteristics. Further, the IOR is calculated to explore the effect of varying degrees of variation of areas, or clusters. The IOR represents an interval in which the odds ratios for two randomly selected individuals with identical covariates from each cluster would fall for a particular outcome. By placing endpoints on the log odds distribution for a binary outcome at the 10^{th} and 90^{th} percentiles, researchers can conclude that the likelihoods of two randomly selected individuals from two different clusters would fall within the interval 80% of the time. The narrower the interval, then, the less cluster heterogeneity, indicating that a great proportion of the, perhaps small, variation between clusters can be attributed to the variable of interest. While these methods of analysis might serve to create a clearer picture of cluster variable effect, too few studies have employed these methods, lessening potential for comparison among studies.

Theoretical models

Theoretical frameworks useful for studying dropout fall within either an individual or community-level approach. Individual-level theories examine personal and intrapersonal correlates of behavior. Community-level theories, on the other hand, examine group-level constructs as determinants of both individual and social change. The following sections describe theoretical constructs relevant to the study of dropout based on these two overarching approaches to theory.

Individual-level theories

At the individual-level, several theories from social psychology can apply to the study of dropout. Social-cognitive theory (SCT) (Bandura, 1977), which focuses on the primacy of a person's perceived self-efficacy to achieve academic success might explain the lack of academic achievement for youth who drop out. Tied to these perceptions of self-efficacy are the goals that initiate the behaviors, as well as positive outcome expectancy, for accomplishing these goals (Bandura, 2004). SCT would explain a "goal" that children would have in engaging in problem behaviors so that they would not need to participate in an activity at school that they believed would lead to failure. Other theories also explain the role of motivation, such as attribution theory (Kelley, 1980), self-perception theory (Bem, 1967), and self-determination theory (Ryan & Deci, 2000). Self-determination theory conceives of three areas of need that, once satisfied, will predict motivation: a need for competence, autonomy, and relatedness. Based on this conceptualization, Hardre and Reeve (2003) found that students became engaged at school when activities were "interesting, relevant to their lives, and affirm their competencies." As would be expected, neglect in satisfying a student's needs decreased perceptions of competency and increased intention to drop out.

Theories about interpersonal environments can explain the types of relationships that can develop between students and peers. In the theory of social-information processing (Dodge & Crick, 1990), children fail to cognitively process the actions of others by their proper intent, which can often lead to maladaptive behaviors in response (Mash & Barkley, 2003). While this information-processing approach has been used to predict aggressive behaviors (Dodge, Laird, Lochman, & Zelli, 2002), the theory might serve to explain the reasons for deviant peer affiliations among youth who drop out and exhibit high aggressiveness. SCT constructs also

emphasize the learning and modeling processes through peers, who become the object of reference for the child. In other words, deviant peers have a mirroring effect.

Family-level predictors of dropout involve the quality of relationships formed with family members. In attachment theory (Bowlby, 1988), children develop an "internal working model" based on a secure relationship with their mothers. In a healthy attachment, children expect and count on their mothers to respond when in true need. The quality of the parent-child relationship can have repercussions on the style of parenting, and the levels of stress experienced. Gerard (2004) measured family processes, which consisted of family detachment, parental involvement, and parent's relationship quality, as a cumulative risk in predicting conduct problems and depressed mood. Family detachment, which measured the quality of family affective ties, was the only statistically significant predictor of poor outcomes among the family-level variables. Family systems theory (Bowen, 1966) examines the relationships between family members as a unit, which can promote dysfunction or healthy functioning. In the case of dropouts, a family systems approach would consider the intergenerational nature of dropout.

Social cognitive theories can also apply to how the school environment might affect dropout. Based on self-determination theory, Vallerand et al. (1997) identified autonomy-supportive behaviors from teachers, parents, and school administration as strongly associated with a student's perceptions of competence and autonomy, which in turn affected self-determined motivation. Similarly, Birnbaum et al. (2003a) applied SCT's concept of reciprocal determinism – the triadic relationship between individuals, behaviors, and their environments –to constructing a school functioning index which would serve to explain how student behaviors can be affected by school-level dynamics (interpersonal interactions) and policies.

Community-level theories

Neighborhood-level ecological theories approach dropout from a sociological perspective. The ecological model (Bronfenbrenner, 1989) frames the problem of dropout as the influence of contexts (community, school, family, and peer networks) on adolescent development. Within the community context, social disorganization theory is based on how levels of neighborhood decline (Wilson, 1987) and low social control (Gottfredson & Hirschi, 1990) can affect the quality and extent of social interactions at the *community* level, thus fostering crime and other poor outcomes. Sampson et al. (1997) expounded a theory of collective efficacy to explain signs of physical and social disorder within a neighborhood. The presumption is that neighborhoods with low collective efficacy and social controls would also have higher rates of problem behaviors and delinquencies, which are risk factors for dropping out.

Models of community organization and development can apply to the study of dropout. The social development model considers aspects of the school and neighborhood social environments that encourage bonding and promote prosocial involvement (Catalano et al., 2004b). Using a similar approach, the developmental assets framework (Leffert et al., 1998) identifies 40 assets in a youth's environment that could promote resiliency and prevent high-risk behaviors, such as substance use, violence and dropout. These assets are grouped as either external or internal. External assets consist of support structures (from family and neighborhood), empowerment (as both a community and an individual construct), boundaries/expectations, and constructive use of time. These external assets, combined with internal assets (commitment to learning, positive values, social competencies, and positive identities) create a framework for understanding positive youth development.

Disparities in the neighborhood resources available to residents are a concern, with studies linking the presence of alcohol outlets, youth services, and physical activity facilities to health-related outcomes (Banerjee et al., 2008a; Campbell et al., 2009; Gordon-Larsen et al., 2006; Wieczorek & Hanson, 1997). While neighborhood resources have been shown to have a positive effect on the use of time for sports and higher engagement in religious activities (Kegler et al., 2005), no studies have examined the association of neighborhood resources on dropping out. Neighborhood resources in this study are indicated by the presence of youth organizations, religious institutions, teen health resource centers, and community centers in the area surrounding an individual's residence.

Conceptual model

The conceptual model designed for this study (see Figure 2.1) positions family processes and structure as mediating the relationship between a youth's community environment and academic achievement. In particular, this study examines the influence of family social capital and family structure on neighborhood characteristics and academic achievement.

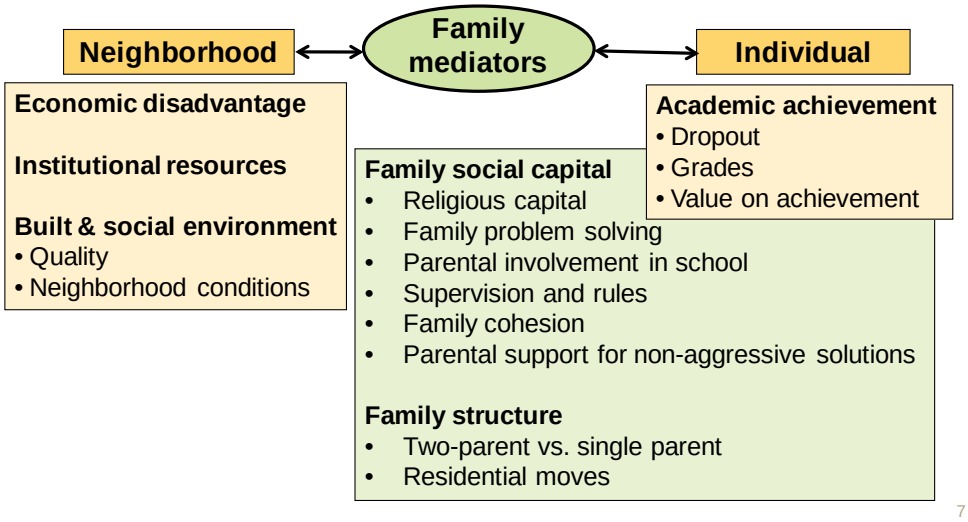

Figure 2.1 Conceptual model

CHAPTER 3

NEIGHBORHOOD DISADVANTAGE, ACCESS TO RESOURCES AND NEIGHBORHOOD QUALITY: COMPARISON BY DROPOUT STATUS[1]

[1] Ehrenreich, H., Orpinas, P., and Yao, X. To be submitted to *American Journal of Community Psychology*.

Abstract

The purpose of this study was to compare neighborhood characteristics of students who dropped out of high school with those who graduated by level of neighborhood disadvantage, availability of institutional amenities and detractions, and quality of the built and social environment. The study consisted of youth who participated in the *Healthy Teens Longitudinal Study* and whose last recorded address was geocoded (N_1=652) and neighborhood observations conducted (N_2=592). Findings revealed that youth living in *extreme disadvantage* or *some disadvantage* were over two times more likely to drop out than students living in neighborhoods with *average* or *some advantage* (OR=2.02, 95% CI = 1.10, 3.72). Further, neighborhood quality was significantly worse for dropouts than for non-dropouts, $t(573)=-1.96$, $p=0.05$. Disadvantaged neighborhoods contained significantly more positive and negative resources than more affluent neighborhoods, signaling competition between local government investment and weak social processes in the residential areas. Observations of structural disrepair and residential turnover underscored this neighborhood-level dynamic. Few studies have examined the physical and institutional environments of youth as they relate to dropout. These findings can serve to improve community-based dropout prevention efforts that rely on an understanding of the neighborhood context of youth.

Introduction

Neighborhood context is not well understood. Like the elephant in the room, it is a factor at times controlled for, measured inconclusively as an individual or aggregate construct, or simply dismissed as less relevant than endogenous factors. To make matters even murkier, the concept of neighborhoods easily branches into several directions at once, with dialogues about the physical, social, geographic, political, and health landscapes. Yet understanding

neighborhood context is critical to a society seeking to decrease racial, economic, educational and health disparities (Dannenberg et al., 2003; Northridge et al., 2003).

The concept of neighborhood has multiple dimensions. For example, an area's level of advantage might transcend suburb-based neighborhood boundaries and include surrounding residences to widen its sphere of influence. Similarly, the residential landscape is composed of institutional resources, which indirectly determine a resident's extent of access or a neighborhood's control over the types of resources available. Concerns regarding socioeconomic inequalities (Krieger, Chen, Waterman, Rehkopf, & Subramanian, 2005) and inequitable access to health resources (Leventhal & Brooks-Gunn, 2000) dominate a particular part of the discussion on place and health, namely community design. To be sure, public health researchers have started committing to an agenda examining how land-use decisions in community design and housing quality might impact health behaviors and outcomes so diverse as physical activity, injuries, mold-induced sicknesses, and lead poisoning (Dannenberg et al., 2003; Srinivasan, O'Fallon, & Dearry, 2003). Educational outcomes, inextricably linked to health (Freudenberg & Ruglis, 2007), are no less relevant to the neighborhood research agenda.

This study contributes to an understanding of what characterizes neighborhoods and examines whether neighborhood characteristics differ between youth who have graduated from high school and those who have dropped out. Neighborhoods are conceptualized in terms of advantage, access to institutional resources, and observable quality. Measures of advantage and access are based on proximity to a youth's place of residence; quality is determined through onsite observations. Together, these neighborhood measures characterize the physical and social environments of where youths live. The aim of the study is to understand the relation between neighborhood context and educational success among a sample of youth.

Neighborhood measures

Information gathered by the census bureau about household characteristics is a reliable and stable gauge of neighborhood advantage. The choice of indicators, however, is far from definite. Examples of economic indicators most often used to describe socioeconomic disadvantage are poverty rate, unemployment rate, and percentage of families on public assistance. Neighborhood indexes also include demographic indicators on age and racial/ethnic distributions, as well as neighborhood and family structural qualities, such as vacant housing rate and percentage of single parents (Crowder & South, 2003; Emory et al., 2008; Franzini, Caughy, Nettles, & O'Campo, 2008; Li et al., 2010; Stouthamer-Loeber et al., 2002).

In fact, Galobardes et al. (2006) listed over 20 possible indicators of economic advantage in health research that broadly fell into measures of education, housing (housing tenure, housing condition, housing amenities), income, and occupation. Each area, the authors stressed, has a sound theoretical basis for constructing an index, but can have limitations related to measurement. While income certainly is the strongest indicator of economic well-being, for example, respondents are generally sensitive about revealing this information on a survey and tend to overstate their income. Alternatively, housing characteristics has gained attention through introduction of the “broken windows” index (Cohen et al., 2000), which captures physical and social disorder manifest through graffiti, unrepaired housing, abandoned cars, and other observable signs. Yet these aspects discriminated rates of disease (gonorrhea) better than economic advantage among residents.

Ultimately, the choice of indicators depends on the focus of the research. The present study uses four indicators to describe a neighborhood’s structural, demographic, and economic environment. These indicators are the number of 1) families with children under 18 years, 2)

female-only householders with children under 18 years, 3) vacant housing units, and 4) persons below the poverty rate. It is possible that indicators for housing and family composition might fluctuate widely in a depressed real estate market where more houses than usual remain unsold or foreclosed. The indicators used in this study, however, stem from census 2000, just prior to the precipitous drop of the housing market. The indicators should therefore reflect relatively stable characteristics, allowing comparability across neighborhoods in the study sample.

Institutions, both private and public, also characterize the neighborhood environment. Researchers have examined the presence of institutions or enterprises for their positive or negative influence on residents as a function of access. The bulk of studies has focused on the presence of retail alcohol outlets, finding a link between higher alcohol outlet density and increased alcohol use among adolescents (Tobler, Komro, & Maldonado-Molina, 2009), higher violent assault rates and injuries (Banerjee et al., 2008b; Campbell et al., 2009; Gruenewald, Freisthler, LaScala, Treno, & Ponicki, 2010), and lower social capital (Theall et al., 2009). Some research has surrounded the presence of convenience stores for increasing exposure to unhealthy foods, (Gebauer & Laska, 2011), tobacco advertisements (Ajibade, 2009) and violence-related crime (Peek-Asa & Zwerling, 2003) especially among youth, although the mechanisms of these associations are understudied. By contrast, in the National Survey of Children's Health (Dowd et al., 2007), data collection supported in part by the U.S. Department of Health and Human Services, researchers classified recreation centers, parks, libraries and sidewalks, as "amenities" for a child's health and well-being. In support of this approach, Gordon-Larsen, Nelson, Page and Popkin (2006) found an association between increased presence of recreational facilities and youth organizations in neighborhoods, and higher engagement in physical activity among a national sample of adolescents.

In many of these studies, a geographic information system (GIS) approach lent itself to the study of the physical and social environment. As a public health surveillance strategy, GIS has enabled researchers to identify patterns, or clusters, of a wide range of health outcomes, such as coronary heart disease, obesity, alcohol-related problems, injury, and intimate partner violence (Diez-Roux et al., 2001; Edelman, 2007; Gordon-Larsen et al., 2006; Li et al., 2010; Lipton et al., 2003). A newer application of GIS technology is describing spatial differences based not only administrative boundaries (i.e., census tract, zip code or county) but on shared characteristics of space (Ricketts, 2003). In essence, these constructed boundaries determine the appropriate denominators of a spatial epidemiological approach. Travel distances between injury events, areal concentrations of disease outbreaks, and travel time to medical facilities are all examples of GIS-derived denominators. While useful for linking spatial information to outcomes, GIS can also lead researchers astray towards supporting an "ecological fallacy," where researchers link environmental attributes to an individual (Robinson, 1950). In other words, the proximity of facilities does not necessarily dictate use by residents and subsequently affect their behaviors. However, the presence of neighborhood institutions can have a spillover effect on residents, regardless of actual use. For example, the presence of alcohol outlets might attract visitors who commit violence in that area and affect residents.

An additional way to assess the neighborhood is through direct observation. Indeed, systematic social observations (SSO) are increasingly used to shore up gaps in environmental descriptions if left to census records, institutional addresses, or any other administrative record alone. SSO tools consist of neighborhood checklists (Zenk et al., 2005a), videotaped drive-bys, and observer logs (Sampson & Raudenbush, 1999). During observations, researchers rate the quality of the physical and social surroundings and availability of resources. It is important to

note that the reliability and validity of this method have shown mixed results. Observations of physical disorder, such as poor vacant lot condition or the presence of graffiti, tended to discriminate neighborhoods better than less stable characteristics, such as noise and strewn garbage (Caughy et al., 2001). Further, observations relating to social disorder, such as the presence of people drinking alcohol, adults fighting, or prostitutes, were less frequent and therefore offered relatively low reliability (Raudenbush & Sampson, 1999). In a meta-analysis of studies using SSO methodology, Schaefer-McDaniel, Caughy, O'Campo and Geary (2010) recommended a more standard approach to observations in which authors discuss their rationale for defining neighborhoods and for conducting observations (time of day, length of observation, etc.) to increase methodological rigor.

Purpose and Hypothesis

The purpose of this study was to compare neighborhoods of students who dropped out of high school with those who graduated by the following neighborhood characteristics: level of neighborhood disadvantage, availability of positive youth amenities and detracting resources, and structural quality of the built and social environment. The study used several sources of data — census, national consumer research database and neighborhood observations — to characterize neighborhoods. A GIS-based approach was used to map and analyze spatially referenced data. Ultimately, the research aims to link aspects of the physical and social environments to high school dropout, an outcome strongly associated with many health-risk behaviors.

The main hypothesis of the present study is that students who drop out of high school will live in neighborhoods with higher levels of neighborhood disadvantage, fewer neighborhood resources, and poorer neighborhood quality than students who graduate from high school. A

youth's living environment has the potential to offer resources and social support that could improve the learning environment and academic skills. The findings can contribute to the development of conceptual frameworks linking aspects of the built environment (Northridge et al., 2003) and neighborhood institutional resources (Kegler et al., 2005; Leventhal & Brooks-Gunn, 2000) to positive youth outcomes.

Parent study: Healthy Teens Longitudinal Study

The parent study for the present research is the *Healthy Teens Longitudinal Study*. Funded by the U.S. Centers for Disease Control (CDC), *Healthy Teens* consists of a cohort of approximately 700 students followed yearly from middle school through high school. The students attended one of nine middle schools that fed into eight high schools located in six counties in Northeast Georgia. In middle school, students initially took part in the *Multisite Violence Prevention Project*, a study seeking to examine the effects of two school interventions on reducing aggression and violence among sixth graders (Multisite Violence Prevention Project, 2004). Selection of study participants occurred through two sampling procedures: a large, random sample of students (defined as universal sample) and a small, high-risk sample of students (defined as targeted sample). Teachers identified students in this latter group as having problems with aggression and being influential among peers. Some students were both randomly selected and identified by teachers as high-risk (defined as "both" sample). Youth participants completed annual surveys, from Grade 6 through Grade 12 (spring 2009), on a number of violence-related behaviors (aggression toward peers, substance use, delinquency, dating violence, and suicidal thoughts and plans). Youth also reported on risk and protective factors in multiple domains of the ecological model: peer, school, family, and neighborhood. The objective of *Healthy Teens* was to increase understanding of the risk and protective factors that

influence developmental trajectories of problem behaviors among youth. As a mixed-methods study, *Healthy Teens* research staff gathered survey, teacher reports, and archival data, as well as conducted interviews and focus groups with students. *Healthy Teens* investigators followed up in the community with participants who had dropped out of high school during the project period. *Healthy Teens* neighborhood data were collected upon completion of survey data collection in the summer of 2009.

Methods

Research design

The present study uses a cross-sectional design to explore the neighborhood environments of a sample of high school students who took part in the *Healthy Teens* study. The overall aim is to identify features of the physical and social environments of these youth that might affect the decision to drop out or stay in school. This study uses data collected through the census bureau, a business reference database, and observations to qualify each participant's neighborhood, located using the last home address provided. GIS software is subsequently used for visualizing patterns of these features within a participant's environment through mapping. A GIS-based approach has the additional advantage of measuring spatial relationships between place of residence and features within the environment. These constructs of neighborhood environment are further elucidated through qualitative observations and ratings.

The University's Institutional Review Board approved all data collection procedures. A parent or caretaker granted permission in Grades 6 and 9 for the child to take part in the study. Youth assented to project participation at each data collection point.

Sample

As shown in the Consort Table (Figure 3.1), 78% (n=839) of the 1070 students invited to participate in Grade 6 consented to participate in the study. Of these students, 689 (82%) reconsented to participate in Grade 9. The present study used the last known physical address of each participant for geocoding. Records of seven students who moved out of state were eliminated. In total, 652 students were successfully geocoded, resulting in a match rate of 96%. The sample for the geocoding and neighborhood observations (N_1) consisted of slightly more boys (54%) than girls and self-reported race/ethnicity of 47% Caucasian, 38% African-American, and 11% Latino. From this sample, 19% of the students (n=122) dropped out of high school by Grade 12. We were unable to verify the dropout status of 17 participants: six youth attended a school unknown to project coordinators, eight youth were lost to follow up, and three youth withdrew consent.

The sample for observational data collection (N_2) had an additional 60 records removed because raters were unable to locate geocoded addresses, resulting in a sample size of 592 participants. These 60 youth eliminated from the study sample did not differ significantly from remaining participants by gender, race, or high school dropout status.

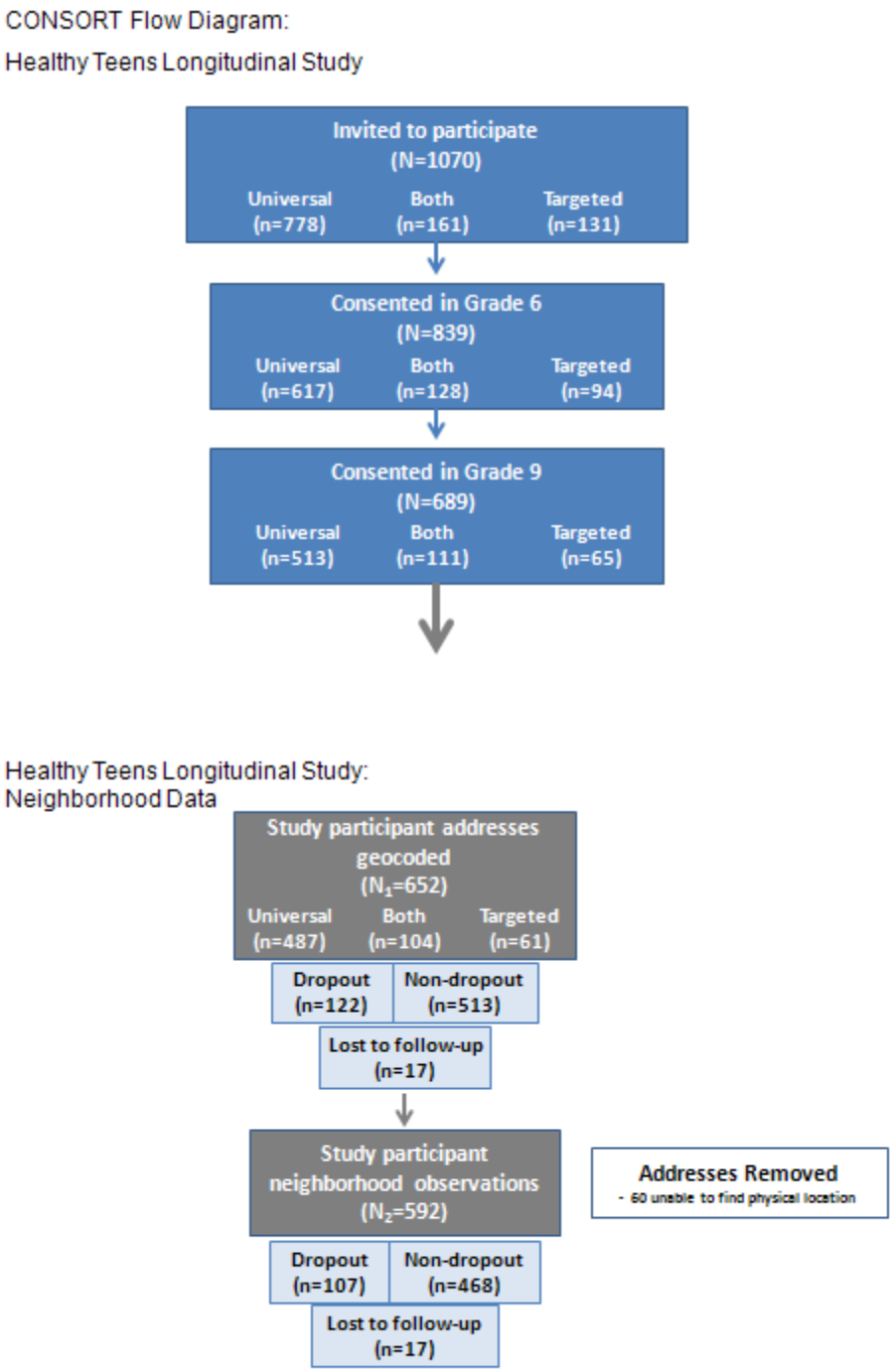

Figure 3.1 Consort flow diagram of Healthy Teens Longitudinal Study

Measures

This study used three measures of neighborhood characteristics: the Neighborhood Disadvantage Index, the number of positive and detracting youth resources, and the Neighborhood Observational Checklist. High school dropout was defined as the outcome variable of interest.

1. Neighborhood Disadvantage Index

The Neighborhood Disadvantage Index (NDI) indicates the level of advantage within a neighborhood, defined as a 1-mile radius surrounding the study participant's residence. The NDI used four census block group indicators to define disadvantage: number of households with children under 18 years (P36001, Census 2000 Summary File 1); number of female householders with children under 18 years (P36015, Census 2000 Summary File 1); number of vacant housing units (H5001, Census 2000 Summary File 1); and number of persons with income in 1999 below poverty level (P87002, Census 2000 Summary File 3). For the first three indicators, the census bureau presents count data from all people living in an area, which are contained in Summary File 1 (SF-1). The fourth indicator, the number of people below the poverty level, is based on a sample of households that is weighted to represent an entire population; the data are considered slightly less accurate than data from 100% of the sample. Census 2000 information was downloaded by block group, together with geographic identifiers, from http://factfinder.census.gov.

2. Youth Resources

Youth resources measure the number of institutional resources within a two-mile distance from a participant's place of residence, defined as the youth's "neighborhood." Two types of neighborhood resources existed: 1) positive youth amenities (youth organizations and centers,

youth ministries, recreation centers, parks, educational programs, educational centers, libraries and churches), and 2) "detracting resources" (liquor retail outlets, bars, convenience stores, pawnbrokers and title pawns). The online business database ReferenceUSA (http://www.referenceusa.com/Home) provided institutional addresses through a custom search by Standard Industrial Classification (SIC) codes for organizations fitting the criteria of being a youth resource and being located within the study county. While available by subscription only through the University, all data provided by ReferenceUSA were retrieved from public sources. A free web-based application, BatchGeo (http://batchgeo.com/), used Google Map's application programming interface (API) to geocode and map institutional addresses pasted on to its webpage. The latitudinal and longitudinal coordinates were downloaded in KML (key markup language) file format and imported into an Excel spreadsheet for use in GIS software. Once imported into ArcGIS 9.3.1 version software, the coordinates were mapped in a geographic coordinate system (North American Datum 1983) and projected in a universal transverse Mercator (UTM) coordinate system (NAD 1983 UTM Zone 17N) on the *Healthy Teens* study area. The participant residences had a 2-mile buffer area drawn around each location. A spatial join function summed the count of resources (amenities or detractions) that fell within the boundaries of the buffer zones.

3. Neighborhood Observational Checklist

Researchers rated student neighborhood environments using the Neighborhood Observational Checklist (NOC, see Appendix A.) (Zenk et al., 2005a). Zenk et al. (2005a) modeled the NOC after the systematic social observation (SSO) instrument developed for the Project on Human Development in Chicago Neighborhoods (PHDCN) (Sampson & Raudenbush, 1999). The NOC, which was adapted for the present study, consists of 33 items on aspects of the

built and social environments, two items on neighborhood identification and one item for observer comments (see Appendix X).

NOC was created using Questionnaire Development System (QDS) version 2.6.1 software by NOVA Research Company. Since high reliability of the instrument is paramount for assessing neighborhood constructs, each rater underwent standardized training on how to interpret NOC item questions and responses so as to increase inter-rater agreement (see Appendix A for training manual). The trained observer drove through neighborhoods rating face blocks, i.e. both sides of the street of residence. Raters used laptop computers to enter observations into an electronic database created using QDS Data Warehouse Manager Version 2.6 software. For data entry purposes, each participant received a unique identifier that would not readily link home addresses to *Healthy Teens* survey data.

Dropout

Participants were defined as dropout if a youth: 1) had dropped out of his or her respective high school and was not attending any other educational institution, 2) was seeking general educational development (GED) certificate, 3) was enrolled in job corps training only, or 4) was expelled from his or her respective high school. *Not* included in this definition of dropout were youth who attended: 1) alternative, punitive school, 2) private school, 3) public school not participating in the *Healthy Teens* project, 4) home school, or 5) alternative, non-punitive school. Youth who were hospitalized or homebound, in custody of the Department of Juvenile Justice, living in a group home, or receiving psychiatric treatment were not included in the dropout sample. In addition, youth who were attending college or had already graduated (with high school diploma or GED certificate) were defined as graduated. Dropout status was defined using information from student surveys and school reports.

Statistical analysis

Three sets of statistical analyses were used to examine measures of neighborhood disadvantage, youth resources, and neighborhood quality in relation to each other and to dropout, the outcome variable. For each measure, descriptive statistics provided summaries of item frequency and central tendency. Where bivariate analyses resulted in statistically significant differences, the adjusted standardized residual was used to discriminate individual cells that had observed values considerably larger (greater than an absolute value of 2.0) than the fitted cell value (Anscombe & Tukey, 1963).

The first set of analyses consisted of multiple steps. First, a measure for neighborhood disadvantage was created based on census data (households with children under 18 years, female householders with children under 18 years, vacant housing units, and persons below poverty) within a 1-mile radius of each participant's place of residence. Using principal components analysis of the census data, I created a neighborhood disadvantage index (NDI) from the component score. NDI scores were then grouped using hierarchical and non-hierarchical cluster analysis. Finally, an odds ratio expressed the probability of dropout occurring as a function of NDI group membership.

In the second set of analyses, neighborhoods were assessed by the number of institutional resources located within a 2-mile radius of a participant's residence. Resources classified as amenities were examined independently from resources classified as detractions. Univariate analyses using ANOVA and t-tests were used to compare the average number of resources by neighborhood disadvantage and dropout status.

The third set of analyses used both quantitative and qualitative data from neighborhood observations. Based on measures of neighborhood conditions on the neighborhood observational

checklist (NOC), dichotomous responses were summed to create a neighborhood quality index. T-tests tested for significant mean difference in neighborhood quality by neighborhood disadvantage and dropout status.

Comments made by raters about neighborhoods were coded *post hoc* by the investigator. Identifying themes for comment coding is a form of "inductive analysis" considered a preliminary step in qualitative data analysis for sorting information into count data (Creswell, 1998). As opposed to a deductive approach, where the researcher tests preconceived theories through expected response categories, an inductive approach requires researchers to identify discreet patterns that might otherwise be "left invisible" *after* examining the data (Thomas, 2006). Chi-squared tests of comment categories examined differences in neighborhoods of dropouts versus non-dropouts. Verbatim comments further illustrated significant differences.

Measure Development: Neighborhood Disadvantage Index

The neighborhood disadvantage index (NDI) combined information from the spatial locations of the study participants with feature census attributes. In ArcGIS, each student resident – represented as a point on the map – had a one-mile buffer drawn as a polygon shape around it. These polygons were intersected with a shapefile containing block group boundaries and census information associated with the respective block group. A shapefile is a spatial data format created by Environmental Systems Research Institute, Inc. (ESRI) to store geometry and attribute information for spatial features in the data set.

An index score for neighborhood disadvantage resulted from a principal components analysis (PCA). Some controversy surrounds the use of common factor analysis (CFA) versus PCA, because PCA has no error term that would represent a variable's unique variance and reflect measurement error. The omission of error variance can subsequently inflate factor

loadings (Gorsuch, 1990) and arguably overstate the association between variables. Others have argued, however, that slight differences in PCA and CFA results are not likely to change the interpretation of component or factor scores (Velicer & Jackson, 1990). Also a consideration in factor model choice is the purpose of the analysis (Sharma, 1996; Widaman, 1993). PCA is most appropriate when the aim of the analysis is to obtain a composite of the variables, which can be used in a subsequent cluster analysis (Ben-Hur & Guyon, 2003).

Cluster analysis of the neighborhood disadvantage index separated participant neighborhoods into discrete socioeconomic groups. The cluster analyses followed two steps. First, an agglomerative hierarchical clustering method was applied using the PROC CLUSTER procedure in SAS, since no *a priori* knowledge about the number of groups is needed (Sharma, 1996). In this approach, similar observations are continuously clustered, or agglomerated, by nesting into the previously formed group. That is, the number of clusters at each stage is one less than the previous number of groups. Hierarchical clustering served to identify the possible number of groups and cluster initial seeds based on differences in NDI values. For group separation, Ward's method was used as the clustering algorithm because of its tendency to create homogeneous groups of approximately equal size by separating observations not by computed distances but by maximizing within-cluster homogeneity (Sharma, 1996). The second step used a non-hierarchical clustering method (PROC FASTCLUS in SAS) based on the *k* number of groups and initial partitioning cluster seeds identified in the hierarchical cluster analysis at the beginning.

For determining NDI values, it was necessary to calculate the proportion of each block group falling within the 1-mile buffer area surrounding each student residence. Any part of a block group falling outside of the buffer area would namely no longer designate a student's

"neighborhood." For calculating the proportion, a field was created in which the square-mile area of each block group was automatically calculated. Then another field was created that calculated the square-mile area after the intersection of the buffer/block group areas. Using the newly calculated intersect areas, the proportion consisted of the ratio of intersect area by the original square-mile area of the block group. The next step consisted of creating a field for each census indicator in which the proportion is multiplied by the original census indicator. Finally, all census proportions were collapsed by unique participant identifier. In this dissolve process, a summary statistic was created for each census indicator.

The following procedures were conducted using ArcGIS:

1) Created a shapefile consisting of four census block group indicators:
   - Households with children under 18 years (P36001, SF-1)
   - Female householders with children under 18 years (P36015, SF-1)
   - Vacant housing units (H5001, SF-1)
   - Persons below poverty (P87002, SF-3)
2) Drew a 1-mile buffer zone around each study participant's residence.
3) Intersected study area containing census indicators with each buffer zone.
4) Calculated the proportion of each block group that fell within the buffer zone by dividing intersect area by original block group area.
5) Multiplied each census indicator by proportion.
6) Dissolved buffer areas by student ID and summed values for each indicator.

To increase comparability of census indicators from the study sample to the state population, the summarized census indicators were standardized using block group data for Georgia. Standardization also improves comparability of variables measured on different scales. Study indicators were normed by subtracting the means across Georgia from sample means and dividing by the state's standard deviation, resulting in a z-score with a mean of zero and standard deviation of one. Table 3.1 lists mean, standard deviation (SD), skewness and kurtosis values of unstandardized and standardized census indicators.

Table 3.1 Unstandardized and standardized census indicators (mean, SD, skewness, and kurtosis)

Census indicator	Mean (SD)	Skewness	Kurtosis
Households w/ children < 18 yrs.	304.61 (341.74)	1.74	2.82
z-score	-0.23 (0.87)	1.74	2.82
Female householders w/ children < 18 yrs.	97.31 (172.53)	3.05	9.60
z-score	0.02 (1.66)	3.05	9.60
Vacant housing units	41.03 (68.45)	3.04	9.65
z-score	-0.25 (1.04)	3.04	9.65
Persons in poverty	378.90 (823.74)	3.48	12.55
z-score	0.51 (3.41)	3.48	12.55

A PCA resulted in a single component explaining a relatively large proportion of the shared variance (88.1%) between variables. Because the PCA used variables already standardized, it is best to use the covariance matrix instead of the correlation matrix, which is a standardized version of the covariance matrix (Vyas & Kumaranayake, 2006). The communalities of the variables, namely the sums of the squared loadings after extraction, were high (0.72-0.99), which reflected high correlations between variables. The single component was renamed the *Neighborhood Disadvantage Index* (NDI). Finally, the NDI can be expressed as a linear regression equation using the component score coefficient matrix to weight individual variables. The equation can be written as

NDI = 0.041(CHILD) + 0.166(FEMALE) + 0.068(VACANT) + 0.749(POVERTY)

where CHILD indicates the number of households with children under 18 years, FEMALE is the number of female householders with children under 18 years, VACANT is the number of vacant housing units, and POVERTY is the number of people below the poverty level. Based on the relatively high value of the POVERTY coefficient, it is clear that the NDI score is most influenced by the census indicator for poverty.

Next, a cluster analysis was performed to group NDI scores into neighborhood types. In the first step, a hierarchical cluster analysis using Ward's method revealed a 4-cluster solution.

Decision criteria for the solution were based on the three values listed in Table 3.2. First, the root-mean-square standard deviation (RMSSTD) reflects the pooled standard deviation of variables, which in this case is the single NDI composite score, for all observations within the cluster. It is important to note that the smaller the RMSTD, the more homogeneous the observations within the cluster, although there is no cutoff value for defining "small" (Sharma, 1996). While the 5-cluster solution has the smallest RMSSTD value, the 4-cluster and 3-cluster solutions dropped considerably below the 2-cluster value of 1.16. Second, with the cluster analysis procedure merging the previous two clusters, the semipartial R-squared (SPRSQ) reflects a loss in homogeneity based on differences between the pooled variance within the new cluster (sum of squares within, SSw) minus the sum of pooled SSw's of clusters already joined. Again, the objective is to choose a cluster solution with low SPRSQ values and maintain cluster homogeneity. The values in the table demonstrate a noticeable "jump" in SPRSQ between the 2-cluster and 3-cluster solution and then a further drop for the 4-cluster and 5-cluster solutions. Finally, the R-squared value (RSQ) measures the heterogeneity between clusters as the ratio of the variance between groups (sum of squares between, SSb) to total variance (total sum of squares, SSt). In this case, larger RSQ values reflect greater differences between groups. While the highest RSQ value is for the 5-cluster solution, the value rose above 0.90 from the 3-cluster to the 4-cluster solutions. Overall, the 4-cluster solution had relatively low RMSSTD, low SPRSQ and high RSQ values that would adequately distinguish observations into four groups by NDI. In a leave-one-out (L-O-O) external classification analysis, the four-group solution rendered high posterior probabilities ranging from 0.94-1.0, which were based on the observed hit rate, and high classification accuracy that was statistically significantly higher than chance (see Table 3.3).

A non-hierarchical cluster analysis followed using initial seed values obtained from the 4-cluster solution in the preceding hierarchical cluster analysis. The non-hierarchical cluster solution had an approximate overall R-square of 0.94. Clusters one and two differed most from cluster four by having the greatest distance between their centroids and the centroid of cluster three (see Table 3.4). Cluster one had the highest mean, at over four standard deviations above average. The 4-cluster solution was named: 1 = *Extreme disadvantage*, 2 = *Disadvantage*, 3 = *Average* and 4 = *Some advantage.*

Table 3.2 Hierarchical cluster analysis solutions using Ward's method

No. of clusters	Frequency	RMSSTD[1]	SPRSQ[2]	RSQ[3]
5	439	0.130714	0.0085	.966
4	51	0.559438	0.0168	.950
3	575	0.321784	0.0697	.880
2	77	1.16345	0.1292	.751
1	652	1.0	0.7507	.000

[1] RMSSTD = root-mean-square standard deviation

[2] SPRSQ = semipartial R-squared

[3] RSQ = R-squared

Table 3.3 L-O-O external classification analysis using cluster analysis classification rule

Cluster	E_j	H_o	z	p-value
1	5.8	1.0	8.30	<0.0001
2	8.0	1.0	9.80	<0.0001
3	36.3	0.94	9.32	<0.0001
4	113.0	0.96	4.87	<0.0001

E_j = Number of expected hits
H_o = Observed hit rate

Table 3.4 Clusters by their mean, standard deviation and centroid distance values

			Distance between cluster centroids			
Cluster	Means	SD	1	2	3	4
1: Extreme disadvantage	4.19	0.64	.	2.17	4.02	4.59
2: Disadvantage	2.02	0.46	2.17	.	1.85	2.42
3: Average	0.17	0.29	4.02	1.85	.	0.57
4: Some advantage	- 0.40	0.09	4.59	2.42	0.57	.

Results

1. Neighborhood Disadvantage Index

Table 3.5 lists the percentage dropout by neighborhood disadvantage group. Over two-thirds of the study sample lived in a neighborhood with some advantage (less than a half standard deviation above the mean), and another 22% lived in average conditions. Only a small proportion of the sample (5%) lived in disadvantaged neighborhoods and even fewer (n=23) lived in extreme disadvantage.

The odds of students dropping out of school if living in neighborhoods with *extreme disadvantage* or *disadvantage* was over two times higher than the odds of students dropping out if living in neighborhoods with *average* and *some advantage* (OR=2.02, 95% CI = 1.10, 3.72).

Table 3.5 Study sample (frequency, percent) and percentage of dropout by NDI group

	Frequency	% of sample	Dropout rate
Extreme disadvantage	23	3.5%	30.4%
Disadvantage	32	4.9%	31.3%
Average	145	22.2%	16.8%
Some advantage	452	69.3%	18.5%

2. Youth Resources

Table 3.6 lists the amenities and detractions in a youth's neighborhood by frequency and SIC-code. The number of amenities ranged from 0 to 78, with a median of 6 and mean of 12 (SD= 16); the number of detractions ranged between 0 to 73, with a median of 3 and mean of 9 (SD= 15).

In comparisons of resources by neighborhood disadvantage using ANOVA, neighborhoods with *extreme disadvantage* and *disadvantage* had significantly more amenities, $F(3,648) = 1070.90$, $p<.001$, and detractions, $F(3,648) = 935.10$, $p<.001$, than neighborhoods with *average* and *some advantage*. In other words, the higher the level of neighborhood

disadvantage, the greater the number of amenities and detractions. On average, neighborhoods with any levels of disadvantage had seven times more amenities (56 vs. 8) and eight times more detractions (48 vs. 6) than neighborhoods with average or some advantage. In independent samples t-tests, the differences between the two neighborhood advantage types (disadvantage or no disadvantage) were statistically significant by amenities, $t(650) = -37.23$, $p<.001$, and detractions, $t(650) = -35.37$, $p<.001$.

Neighborhoods of dropouts had slightly more resources, both positive and negative, on average than neighborhoods of non-dropouts, although the difference was not statistically significant.

Table 3.6 Amenities and detractions with primary SIC-codes within study area counties (n=25)

Resources	SIC-code	Frequency
Amenities (n=2164)		
Youth organizations and centers	832222	75
Parks / Recreation centers	799951 / 799701	131
Educational programs / Education centers	821108 / 829972	40
Libraries-public	823106	68
Churches / Ministries	866107 / 866127	1850
Detractions (n=1174)		
Liquor retail	592102	98
Bars	581301	119
Convenience stores	541103	771
Pawnbrokers / Title pawn	593229 / 614110	161

3. Neighborhood Observational Checklist

NOC served two uses, as a checklist for neighborhood quality and as a qualitative measure of neighborhoods. Study participants who lived on the same street received duplicate NOC ratings on items because of their shared neighborhood environments.

Observer ratings of neighborhoods using a checklist of items were translated into an index for poor neighborhood quality. Dichotomized indicators of poor neighborhood quality

were presence of the following 17 conditions: poor vacant lot condition, broken-down cars, alcohol containers, discarded cigarette butts, advertisements for tobacco and alcohol, police, trash, graffiti, homes in disrepair, poorly maintained yards, poorly maintained roads, noise, stray dogs, strong odors, dirt as air pollution, and semi-trucks on roads. The cumulative index score for poor neighborhood quality ranged from 0-11, with a mean of 2.4 items (SD = 2.58) per participant neighborhood. Based on an independent samples t-test, neighborhood quality was significantly worse for dropouts than for non-dropouts, $t(573) = -1.96$, $p=0.05$. Neighborhoods characterized as disadvantaged had significantly worse neighborhood quality as compared to neighborhoods characterized with no disadvantage, $t(590) = -2.69$, $p=0.007$.

In addition to the checklist, raters wrote comments about each neighborhood observation. These comments were coded according to a list of themes identified by the researcher. This inductive coding process rendered nine distinct categories that NOC comments could be assigned.

Coded comments differed significantly by dropout status, $\chi 2(8) = 16.32$, $p=.04$, with coding categories and frequencies shown in Table 3.7. In particular, neighborhoods of dropouts had significantly fewer well-maintained homes, adjusted standardized residual = -3.4, $p<0.05$, than neighborhoods of non-dropouts.

Table 3.7 NOC coded comment frequencies by non-dropout and dropout samples

Coding category	Non-dropout (n=468)	Dropout (n=107)
1- Well-maintained homes	23%	8%
2- House poorly accessible, visible	13%	11%
3- Poorly maintained homes	9%	12%
4- Few community resources	8%	9%
5- Community resources in proximity	7%	12%
6- Observant neighbors, police	6%	8%
7- Turnover/Change	3%	7%
8- Other	24%	28%
9- No comments	6%	5%

Table 3.8 cites examples of comments in four coding categories (well-maintained homes, poorly maintained homes, community resources, and turnover) that had the greatest discrepancy in frequency between non-dropout and dropout participants. While almost one-quarter of the residential areas of non-dropouts had well-maintained homes, the residential areas of dropouts also had homes with similar characteristics of upkeep, care and quality. Regardless of dropout status, observers rated some homes as better than expected, especially in areas with noticeably lower SES. In corollary fashion, non-dropouts and dropouts alike occupied residential areas where homes were rated as structurally deficient. The frequency of these poorly maintained homes did weigh more heavily on dropouts, but non-dropout neighborhoods also had homes that were “literally falling apart,” as one observer commented. Beyond the quality of homes themselves, neighborhoods differed with respect to the presence of organizations and resources. Here, too, the neighborhoods of dropouts tended to house more community resources in their vicinity than non-dropout neighborhoods. It is important to note that community resources represented both amenities and detractions and ranged widely from public (bus stops, clinics, schools, and churches) to private-sector organizations (convenience stores, nightclubs, gymnasiums, and cafes). The final category took into account signs of residential change that

real estate market forces might trigger, described as “turnover.” The neighborhoods of dropouts displayed signs of change (i.e., construction, renovation, side-by-side extreme differences in home values, etc.) more than twice as often as neighborhoods of non-dropouts.

Table 3.8 Selected NOC coded categories and examples of comments by dropout status

Coding category	Non-dropout (n=468)	Examples of comments	Dropout (n=107)	Examples of comments
Well-maintained homes	23%	Extremely varied cost of homes: very expensive mansion to shack. One home had several "No Trespassing" signs. Student's home well maintained.	8%	Very nice, although it is a trailer park; homes look clean and welcoming - toys, flowers, chairs decorate small porches; speed bumps rather rough
		Poor neighborhood, but well kept; people outdoors; furniture in yard for socializing.		Entire neighborhood labeled as a dead end - one large circle with a couple of cul-de-sacs; actual block was a cul-de-sac, so opposite block face is the road it branches off of; very nice neighborhood, was not expecting such nice homes when I turned in.
Poorly maintained homes	9%	Not an economically strong area - homes are literally falling apart; road is nothing but dirt with gravel strewn about and several potholes; each home has an undriveable car in the front yard; second block face is just a roped off vacant lot.	12%	House looks almost abandoned; pitbull tied to chain in front; smashed toys and trash all over yard; windows appear broken; on gravel road deep in woods.
		A lot of graffiti/trash off street leading into neighborhood. Attack dogs kept.		Extremely shabby; dangerous-looking area; on gravel road; abandoned homes and old cars.
Community resources	7%	Many different things on block face: fire station, nightclub, school, businesses and homes.	12%	Very long road, public transportation has compensated by having 5+ bus stops on it; first few homes not as nice-looking as the ones that came later; youth sports complex nearby; residential block with several neighborhoods that branch off of it.
Turnover/Change	3%	Large degree of variation between homes - some practically falling apart, while others are very nice and look new; a few mobile homes in one area; neighborhood is dark - a good number of trees block sunlight.	7%	Area has a lot of construction going on - not too many homes; will become a commercial area soon enough.

Discussion

The purpose of this study was to examine ways in which neighborhood environments of youth who dropped out differed from environments of youth who graduated by using three sources of neighborhood data: census, institutional resources, and observations. As expected, census-derived neighborhood disadvantage contributed to the odds of dropping out. Discrepancies in income between neighborhoods are an expected piece of the puzzle that distinguishes youths' environments by dropout. Of particular interest is how dropouts had high access to both positive and negative resources, signaling competition between local government investment and weak social processes in these residential areas. Observations of structural disrepair and residential turnover underscored this neighborhood-level dynamic.

In the first set of analyses, I found that families with higher high school dropout rates lived in neighborhoods with above-average rates of poverty, female-only householders with children, households with children, and vacant housing than neighborhoods where non-dropouts lived. Contextual analyses using multilevel modeling of neighborhood and individual factors have shown a similar link between an environment high in poverty and lower educational attainment (Battin-Pearson et al., 2000; Harding, 2003; Mollenkopf & Champeny, 2009). It is important to note that a certain proportion of study participants who dropped out of high school came from higher SES environments. According to high school completion status in a national 2006 cohort, about half of all dropouts came from the middle two and highest SES quarters combined (Dalton et al., 2009). Evidence of high school dropout within a relatively advantaged population underscores the complexity of the dropout problem.

Further, the statistical association between environmental factors and individual incomes continues to generate controversy in the neighborhood effects literature from researchers who

cite omitted variable bias from unmeasured family characteristics in model specification (Duncan & Raudenbush, 1999; Ginther et al., 2000; Harding, 2003). In a main effects model, families certainly matter, since household income largely drives the parents' decision of where to live. In this study, the objective was not to establish cause and effect but to characterize the neighborhood settings of youth based on income, as well as aspects of the demographic and built environments, in their surroundings.

My findings contribute to the literature by extending a GIS-derived measure of neighborhood disadvantage beyond existing administrative boundaries to include contiguous areas within a one-mile radius of a participant's residence. While no consensus exists for the best measure of neighborhood boundaries, resident-defined neighborhoods surpassed single block group areas to include up to a 0.5-square mile radius for an urban area (Coulton, Korbin, Chan, & Su, 2001) and somewhat larger boundaries for suburban areas (Haney & Knowles, 1978). The study's measure of neighborhood disadvantage provides a useful description of the socioeconomic and built neighborhood context.

Based on my second set of analyses, youth living in disadvantaged neighborhoods had more access to negative and positive institutional resources than youth in wealthier neighborhoods; contrary to study hypothesis, neighborhoods of dropouts did not contain significantly more detractions or amenities. This failure to find statistically significant differences exposes the heterogeneous nature of the sample of dropouts with respect to their residential environments. My additional findings that highly disadvantaged neighborhoods had more resources support similar results from studies set in Australia and the U.K. in which more public community resources existed in economically deprived neighborhoods (Macintyre, Macdonald, & Ellaway, 2008; Pearce, Witten, Hiscock, & Blakely, 2007). In the U.K. study,

Macintyre et al. found that libraries and pawn brokers, however, followed no particular trend by level of neighborhood advantage.

The seemingly counterintuitive finding that poorer neighborhoods housed more resources reflects the simultaneous push-and-pull dynamic of local governments and market forces, causes of neighborhood "blight" (Shlay & Whitman, 2006). On the one hand, local governments are supporting the construction of positive public structures in financially depressed areas. In conjunction with these efforts, church leaders, too, have taken leadership roles in positive community development by rehabilitating vacant houses (Shlay & Whitman, 2006). As an inadvertent counterbalance, areas with low commercial rent attract businesses catering to financially vulnerable (pawn shops) or presumably less health-conscious (bars, liquor outlets) populations. That these types of businesses establish themselves in low advantage areas finds reason in work done by sociologists in identifying underlying neighborhood social processes, such as low collective efficacy and low social control (Morenoff, Sampson, & Raudenbush, 2001; Sampson, Morenoff, & Gannon-Rowley, 2002; Sampson, Morenoff, & Earls, 1999), to explain a neighborhood's inability to discourage detracting businesses. Further studies are needed to understand how the institutional ecology relates to the collective efficacy of neighborhoods, a relationship likely tempered by the political environment. In sum, access to institutions that make up neighborhood environments functions as an indicator as much of local government's urban planning decisions as of community control over business establishments.

In the third set of analyses, higher frequencies of observations of poor neighborhood quality, institutional resources, and turnover in neighborhoods of dropouts support our hypothesis of lower collective efficacy and social control allowing for poor youth behaviors. These findings are consistent with studies finding positive associations between neighborhood

physical disorder and adverse outcomes, such as higher rates of gonorrhea (Cohen et al., 2000), higher delinquency rates (Farrington, Loeber, Yin, & Anderson, 2002), lower verbal ability (Kohen, Brooks-Gunn, Leventhal, & Hertzman, 2002), and higher depression (Cutrona, Russell, Hessling, Brown, & Murry, 2000; Weich et al., 2002). The possibility stands that observers used different criteria for rating neighborhood quality, a source of low reliability (Andresen, Malmstrom, Miller, & Wolinsky, 2006). In the present study, I made efforts to standardize training using a manual to increase reliability.

The underlying assumption is that neighborhood residents collectively promote youth achievement (academic or otherwise) in areas with visible signs of physical order. Structural deficits, in contrast, signal a collective inability of residents to exert control over their environments. Economic disadvantage only partly explains differences in structural qualities. Neighborhoods with residents of similar socioeconomic status, such as mobile home communities or public housing, had worse housing quality where youth had dropped out.

Observations of change, although representing less than 10% of total observations, underlined the increased instability of these neighborhoods through residential turnover and change. Indeed, studies have linked high neighborhood residential instability to increased youth psychopathologies and antisocial behaviors (Buu et al., 2009; Sampson et al., 1997), moderated at times by ethnicity (Kulis, Marsiglia, Sicotte, & Nieri, 2007) and neighborhood disadvantage (Drukker, Kaplan, & van Os, 2005; Peterson, Krivo, & Harris, 2000). Because of the infrequency of observations, additional measures using census indicators and resident surveys would increase validity of the measure of residential turnover. Still, visible cues of change, possibly signaling gentrification because of an upward financial shift, give preliminary support

for the hypothesis that residential turnover lowers collective efficacy and allows for high school dropout risk behaviors, such as truancy and delinquency.

The study is limited in three respects that would strengthen understanding of how youth interact with their neighborhood environments. First, measures of social disorder were not available in the analysis. While neighborhood observations included measures of social organization (presence of people, drug paraphernalia, visible symbols of ethnic identity, etc.), the frequencies of these items were too low for a discriminating measure of social disorder. For future studies, additional data are needed on perceptions of residents through direct questioning, an accurate and reliable measure of neighborhood social disorder (Sampson et al., 1997).

Second, it is not clear to what extent youth participated in local institutional resources and how participation affects their academic and social development. The premise for collecting institutional resource data is that institutional resources increase exposure to positive adult role models among youth (Jencks & Mayer, 1990). Whether a larger presence of positive youth resources translates into higher participation among residents has found limited support, however (Kegler et al., 2005). Further, it is possible that the positive influence of institutional resources is more constrained to severely disadvantaged populations, as one study detected a positive effect of amenities on reducing violent crime in only the most economically deprived neighborhoods (Peterson et al., 2000). The mediating effects of a youth's institutional ecology on academic outcomes are poorly understood (Leventhal & Brooks-Gunn, 2000).

Third, it is important to bear in mind that dropout generally occurs as part of a cumulative process, interacting with factors from multiple domains (individual, family, school, and community). The present study examines a particular domain, neighborhood, as a snapshot of a youth's context of development. A limitation of this approach is that the unit of analysis is the

participant's neighborhood as defined by the last recorded home address. It is possible that youth moved after dropping out of high school but continued participation in the *Healthy Teens* study. In such a case, study neighborhoods would not represent the immediate conditions under which the youth had dropped out. Most likely, these youth moved to neighborhoods of similar or worse advantage, causing an underestimation of neighborhood effect.

In summary, I found that youth who dropped out tended to live in neighborhood environments characterized by disadvantage, access to more institutional resources, poorly maintained homes and higher residential changes. Contrary to expectation, neighborhoods of dropouts had more positive and negative resources, manifestations of a balancing act between local government investment in institutional amenities and low collective efficacy of poor neighborhoods to resist detracting businesses. Observations supported this hypothesis of low collective efficacy and social control by the higher frequency of structural deficits, institutional resources, and signs of turnover and change in neighborhoods of dropouts. Further studies are needed to investigate this claim. Neighborhoods of non-dropouts, even if disadvantaged, exhibited higher social control by maintaining housing quality although some observations indicated poor structural quality.

Few studies have examined the physical and institutional environments of youth as they relate to dropout. A combination of data obtained by census, institutional databases, and observations provides a more nuanced characterization of neighborhood environments than any single measure. These findings can serve to improve community-based dropout prevention efforts that rely on an understanding of the neighborhood context of youth.

References

Ajibade, P. B. (2009). Supersizing of tobacco advertising targeting youth: A pilot study of convenience stores in Virginia. *Virginia Journal*, *30*(2), 15-19.

Andresen, E. M., Malmstrom, T. K., Miller, D. K., & Wolinsky, F. D. (2006). Reliability and validity of observer ratings of neighborhoods. *Journal of Aging and Health, 18*(1), 28-36. doi: 10.1177/0898264305281001

Anscombe, F. J., & Tukey, J. W. (1963). The examination and analysis of residuals. *Technometrics, 5*(2), 141-160.

Banerjee, A., LaScala, E. A., Gruenewald, P. J., Freisthler, B., Treno, A., & Remer, L. (2008). Social disorganization, alcohol and other drug markets, and violence: A space-time model of community structure *The geography of illegal drug markets B2 - The geography of illegal drug markets*: National Institute on Drug Abuse and American Association of Geographers Monograph.

Battin-Pearson, S., Newcomb, M. D., Abbott, R. D., Hill, K. G., Catalano, R. F., & Hawkins, J. D. (2000). Predictors of early high school dropout: A test of five theories. *Journal of Educational Psychology, 92*(3), 568-582.

Ben-Hur, A., & Guyon, I. (2003). Detecting stable clusters using principal components analysis. In M. J. Brownstein & A. Kohodursky (Eds.), *In functional genomics: Methods and protocols* (pp. 159-182). Totowa, NJ: Humana Press.

Buu, A., DiPiazza, C., Wang, J., Puttler, L. I., Fitzgerald, H. E., & Zucker, R. A. (2009). Parent, family, and neighborhood effects on the development of child substance use and other

psychopathology from preschool to the start of adulthood. *Journal of Studies on Alcohol and Drugs, 70*(4), 489-498.

Campbell, C., Hahn, R., Elder, R., Brewer, R., Chattopadhyay, S., Fielding, J., . . . Middleton, J. C. (2009). The effectiveness of limiting alcohol outlet density as a means of reducing excessive alcohol consumption and alcohol-related harms. *American Journal of Preventive Medicine, 37*(6), 556-569.

Caughy, M. O., O'Campo, P. J., & Patterson, J. (2001). A brief observational measure for urban neighborhoods. *Health & Place, 7*(3), 225-236.

Cohen, D., Spear, S., Scribner, R., Kissinger, P., Mason, K., & Wildgen, J. (2000). `Broken windows' and the risk of gonorrhea. *American Journal of Public Health, 90*(2), 230-236.

Coulton, C. J., Korbin, J., Chan, T., & Su, M. (2001). Mapping residents' perceptions of neighborhood boundaries: A methodological note. *American Journal Of Community Psychology, 29*(2), 371-383. doi: 10.1023/a:1010303419034

Creswell, J. W. (1998). *Qualitative inquiry and research design: Choosing among five traditions*. Thousand Oaks: Sage Publications, Inc.

Crowder, K., & South, S. (2003). Neighborhood distress and school dropout: The variable significance of community context. *Social Science Research, 32*, 659-698.

Cutrona, C. E., Russell, D. W., Hessling, R. M., Brown, P. A., & Murry, V. (2000). Direct and moderating effects of community context on the psychological well-being of African American women. *Journal of Personality and Social Psychology, 79*(6), 1088-1101. doi: 10.1037/0022-3514.79.6.1088

Dalton, B., Glennie, E., & Ingels, S. J. (2009). Late high school dropouts: Characteristics, experiences, and changes across cohorts (NCES 2009-307). Washington, D.C.: National

Center for Education Statistics, Institute of Education Sciences, U.S. Department of Education.

Dannenberg, A. L., Jackson, R. J., Frumkin, H., Schieber, R. A., Pratt, M., Kochtitzky, C., & Tilson, H. H. (2003). The impact of community design and land-use choices on public health: A scientific research agenda. *American Journal of Public Health, 93*(9), 1500-1508.

Diez-Roux, A. V., Merkin, S. S., Arnett, D., Chambless, L., Massing, M., Nieto, F. J., . . . Watson, R. L. (2001). Neighborhood of residence and incidence of coronary heart disease. *N Engl J Med, 345*(2), 99-106. doi: 10.1056/nejm200107123450205

Dowd, K., Kinsey, S., Wheeless, S., Thissen, R. J., Mierzwa, F., Biemer, P., . . . Spicer, P. (2007). National Survey of Child and Adolescent Well-Being. *Adm Policy Ment Health & Ment Health Serv Res, 34*, 150-159.

Drukker, M., Kaplan, C., & van Os, J. (2005). Residential instability in socioeconomically deprived neighbourhoods, good or bad? *Health & Place, 11*(2), 121-129.

Duncan, G. J., & Raudenbush, S. W. (1999). Assesing the effects of context in studies of child and youth development. *Educational Psychologist, 34*(1), 29.

Edelman, L. S. (2007). Using geographic information systems in injury research. *Journal Of Nursing Scholarship: An Official Publication Of Sigma Theta Tau International Honor Society Of Nursing / Sigma Theta Tau, 39*(4), 306-311.

Emory, R., Caughy, M., Harris, T. R., & Franzini, L. (2008). Neighborhood social processes and academic achievement in elementary school. *Journal of Community Psychology, 36*(7), 885-898.

Farrington, D. P., Loeber, R., Yin, Y., & Anderson, S. J. (2002). Are within-individual causes of delinquency the same as between-individual causes? *Criminal Behaviour And Mental Health: CBMH, 12*(1), 53-68.

Franzini, L., Caughy, M. O. B., Nettles, S. M., & O'Campo, P. (2008). Perceptions of disorder: Contributions of neighborhood characteristics to subjective perceptions of disorder. *Journal of Environmental Psychology, 28*(1), 83-93.

Freudenberg, N., & Ruglis, J. (2007). Reframing school dropout as a public health issue. *Preventing Chronic Disease, 4*(4), 1-11.

Galobardes, B., Shaw, M., Lawlor, D. A., Lynch, J. W., & Smith, G. D. (2006). Glossary: Indicators of socioeconomic position (part 1). *Journal of Epidemiology and Community Health (1979-), 60*(1), 7-12. doi: 10.11 36/ jech. 2004.02353 1

Gebauer, H., & Laska, M. (2011). Convenience stores surrounding urban schools: An assessment of healthy food availability, advertising, and product placement. *Journal of Urban Health, 88*(4), 616-622. doi: 10.1007/s11524-011-9576-3

Ginther, D., Itaveman, R., & Wolfe, B. (2000). Neighborhood attributes as determinants of children's outcomes: How robust are the relationships? *Journal of Human Resources, 35*(4), 603-642.

Gordon-Larsen, P., Nelson, M. C., Page, P., & Popkin, B. M. (2006). Inequality in the built environment underlies key health disparities in physical activity and obesity. *Pediatrics, 117*(2), 417-424. doi: 10.1542/peds.2005-0058

Gorsuch, R. L. (1990). Common factor analysis versus component analysis: Some well and little known facts. *Multivariate Behavioral Research, 25*(1), 33.

Gruenewald, P., Freisthler, L. R., LaScala, E., Treno, A., & Ponicki, W. R. (2010). Ecological associations of alcohol outlets with underage and young adult injuries. *Alcoholism: Clinical and Experimental Research, 34*(3), 519-527.

Haney, W. G., & Knowles, E. S. (1978). Perception of neighborhoods by city and suburban residents. *Human Ecology, 6*(2), 201-214.

Harding, D. (2003). Counterfactual models of neighborhood effects: The effect of neighborhood poverty on dropping out and teenage pregnancy. *American Journal of Sociology, 109*(3), 676-719. doi: doi:10.1086/379217

Jencks, C., & Mayer, S. (1990). The social consequences of growing up in a poor neighborhood. In L. E. Lynn & M. G. H. McGreary (Eds.), *Inner-city poverty in the United States* (pp. 111-186). Washington, D.C.: National Academy Press.

Kegler, M., Oman, R., Vesely, S., McLeroy, K., Aspy, C., Rodine, S., & al., e. (2005). Relationships among youth assets and neighborhood and community resources. *Health Education & Behavior, 32*(3), 380-397.

Kohen, D. E., Brooks-Gunn, J., Leventhal, T., & Hertzman, C. (2002). Neighborhood income and physical and social disorder in Canada: Associations with young children's competencies. *Child Development, 73*(6), 1844-1860.

Krieger, N., Chen, J. T., Waterman, P. D., Rehkopf, D. H., & Subramanian, S. V. (2005). Painting a truer picture of US socioeconomic and racial/ethnic health inequalities: The Public Health Disparities Geocoding Project. *American Journal of Public Health, 95*(2), 312-323.

Kulis, S., Marsiglia, F. F., Sicotte, D., & Nieri, T. (2007). Neighborhood effects on youth substance use in a southwestern city. *Sociological Perspectives, 50*(2), 273-301.

Leventhal, T., & Brooks-Gunn, J. (2000). The neighborhoods they live in: The effects of neighborhood residence on child and adolescent outcomes. *Psychological Bulletin, 126*(2), 309-337.

Li, Q., Kirby, R. S., Sigler, R. T., Hwang, S.-S., Lagory, M. E., & Goldenberg, R. L. (2010). A multilevel analysis of individual, household, and neighborhood correlates of intimate partner violence among low-income pregnant women in Jefferson county, Alabama. *American Journal Of Public Health, 100*(3), 531-539.

Lipton, R., Gorman, D., Wieczorek, W., & Gruenewald, P. (2003). The application of spatial analysis to the public health understanding of alcohol and alcohol-related problems. In O. A. Khan (Ed.), *Geographic information systems and health applications* (pp. 57-79). Hershey: Idea Group Publishing.

Macintyre, S., Macdonald, L., & Ellaway, A. (2008). Do poorer people have poorer access to local resources and facilities? The distribution of local resources by area deprivation in Glasgow, Scotland. *Social Science & Medicine, 67*(6), 900-914. doi: 10.1016/j.socscimed.2008.05.029

Mollenkopf, J., & Champeny, A. (2009). The neighbourhood context for second-generation education and labour market outcomes in New York. *Journal of Ethnic & Migration Studies, 35*(7), 1181-1199. doi: 10.1080/13691830903006283

Morenoff, J. D., Sampson, R. J., & Raudenbush, S. W. (2001). Neighborhood inequality, collective efficacy, and the spatial dynamics of urban violence. *39*, 517-560.

Multisite Violence Prevention Project. (2004). The Multisite Violence Prevention Project: Background and overview. *American Journal of Preventive Medicine, 26*(1), 3-11.

Northridge, M., Sclar, E., & Biswas, P. (2003). Sorting out the connections between the built environment and health: A conceptual framework for navigating pathways and planning healthy cities. *Journal of Urban Health, 80*(4), 556-568.

Pearce, J., Witten, K., Hiscock, R., & Blakely, T. (2007). Are socially disadvantaged neighbourhoods deprived of health-related community resources? *Int. J. Epidemiol., 36*(2), 348-355. doi: 10.1093/ije/dyl267

Peek-Asa, C., & Zwerling, C. (2003). Role of environmental interventions in injury control and prevention. *Epidemiologic Reviews, 25*, 77-89.

Peterson, R. D., Krivo, L., & Harris, M. A. (2000). Disadvantage and neighborhood violent crime: Do local institutions matter? *Journal of Research in Crime and Delinquency, 37*(1), 31-63.

Raudenbush, S. W., & Sampson, R. J. (1999). Ecometrics: Toward a science of assessing ecological settings, with application to the systematic social observation of neighborhoods. *Sociological Methodology, 29*, 1-41.

Ricketts, T. C. (2003). Geographic Information Systems and public health. *Annual Review of Public Health, 24*(1), 1.

Robinson, W. (1950). Ecological correlations and the behavior of individuals. *American Sociological Review, 15*(3), 351-357.

Sampson, R. J., Morenoff, J., & Gannon-Rowley, T. (2002). Assessing "neighborhood effect": Social processes and new directions in research. *Annual Review Sociology, 28*, 443-478.

Sampson, R. J., Morenoff, J. D., & Earls, F. (1999). Beyond social capital: Spatial dynamics of collective efficacy for children. *American Sociological Review, 64*(5), 633-660.

Sampson, R. J., & Raudenbush, S. (1999). Systematic social observation of public spaces: A new look at disorder in urban neighborhoods. *The American Journal of Sociology, 105*(3), 603-651.

Sampson, R. J., Raudenbush, S. W., & Earls, F. (1997). Neighborhoods and violent crime: A multilevel study of collective efficacy. *Science, 277*(5328), 918-924.

Schaefer-McDaniel, N., Caughy, M., O'Campo, P., & Gearey, W. (2010). Examining methodological details of neighbourhood observations and the relationship to health: A literature review. *Social Science & Medicine, 70*(2), 277-292.

Sharma, S. (1996). *Applied multivariate techniques*. New York: John Wiley & Sons, Inc.

Shlay, A. B., & Whitman, G. (2006). Research for democracy: Linking community organizing and research to leverage blight policy. *City & Community, 5*(2), 153-171. doi: 10.1111/j.1540-6040.2006.00167.x

Srinivasan, S., O'Fallon, L. R., & Dearry, A. (2003). Creating healthy communities, healthy homes, healthy people: Initiating a research agenda on the built environment and public health. *American Journal of Public Health, 93*(9), 1446-1450.

Stouthamer-Loeber, M., Loeber, R., Wei, E., Farrington, D. P., & Wikstrom, P.-O. H. (2002). Risk and promotive effects in the explanation of persistent serious delinquency in boys. *Journal of Consulting and Clinical Psychology, 70*(1), 111-123.

Theall, K. P., Scribner, R., Cohen, D., Bluthenthal, R. N., Schonlau, M., & Farley, T. A. (2009). Social capital and the neighborhood alcohol environment. *Health & Place, 15*(1), 323-332. doi: 10.1016/j.healthplace.2008.06.001

Thomas, D. R. (2006). A general inductive approach for analyzing qualitative evaluation data. *American Journal of Evaluation, 27*(2), 237-246. doi: 10.1177/1098214005283748

Tobler, A. L., Komro, K. A., & Maldonado-Molina, M. M. (2009). Relationship between neighborhood context, family management practices and alcohol use among urban, multi-ethnic, young adolescents. *Prevention Science: The Official Journal Of The Society For Prevention Research, 10*(4), 313-324.

Velicer, W., & Jackson, D. (1990). Component analysis versus common factor analysis: Some issues in selecting an appropriate procedure. *Multivariate Behavioral Research, 25*(1), 1-28.

Vyas, S., & Kumaranayake, L. (2006). Constructing socio-economic status indices: How to use principal components analysis. *Health Policy and Planning, 21*(6), 459-468. doi: 10.1093/heapol/czl029

Weich, S., Blanchard, M., Prince, M., Burton, E., Erens, B. O. B., & Sproston, K. (2002). Mental health and the built environment: Cross-sectional survey of individual and contextual risk factors for depression. *The British Journal of Psychiatry, 180*(5), 428-433. doi: 10.1192/bjp.180.5.428

Widaman, K. (1993). Common factor analysis versus principal component analysis: Differential bias in representing model parameters? *Multivariate Behavioral Research, 28*(3), 263-311.

Zenk, S. N., Schulz, A. J., House, J. S., Benjamin, A., & Kannan, S. (2005). Application of community-based participatory research in the design of an observational tool In B. Israel, E. Eng, A. Schulz & E. Parker (Eds.), *Methods in community-based participatory research for health* (pp. 167-187). San Francisco: Jossey-Bass.

CHAPTER 4

INFLUENCE OF FAMILY SOCIAL CAPITAL ON ACADEMIC SUCCESS AMONG ADOLESCENTS AT RISK FOR AGGRESSION [2]

[2] Ehrenreich, H., Orpinas, P., and Song, X. To be submitted to *Journal of Youth and Adolescence*.

Abstract

High-aggression youth stand most to benefit from strong bonds developed within the family and to the community, as measured by family social capital. This study examined a sample of high-risk youth (N=176) who took part in the *Healthy Teens Longitudinal Study* from Grades 6-12. The objectives of this study were to identify and describe trajectories of family social capital, examine whether academic performance outcomes differed by trajectories, and investigate differences in neighborhood characteristics by trajectories. Scales used to calculate the social capital index were religious capital, parental support for non-aggressive solutions, family problem solving, parental involvement in school, supervision and rules, and family cohesion. Based on a semi-parametric group-based modeling approach, I identified three distinct family social capital trajectories (low, medium, and high). Living in a two-parent of single parent household did not affect trajectory membership. Youth in higher family social capital trajectories placed significantly higher value on achievement than lower family social capital trajectory members $\chi^2(4) = 15.22$, $p=0.004$. Despite the desire to achieve better academic results than peers, at-risk youth with high family social capital failed to achieve significantly higher grades and complete high school more often than at-risk youth with lower family social capital. Neighborhood characteristics also did not differ significantly by family social capital trajectory group. Further research is needed on how other forms of social capital, within the school or community, might increase the competence of these youth with high family social capital to achieve their academic goals. Study findings imply the need for a multi-level approach to building family social capital that would encourage positive youth outcomes.

Introduction

Parents promote prosocial behaviors among their children through the ways they instill values, enforce rules, and monitor activities in the family (Hemphill, Toumbourou, Catalano, & Mathers, 2004; Laird, Criss, Pettit, Dodge, & Bates, 2008). Outside the family, the degree of positive engagement that family members have with other adults, whether at school, in the neighborhood or at religious services, builds relationships that can further support positive youth development. Taken together, these social interactions affect opportunities for a youth's academic success.

High-aggression youth, in particular, stand most to benefit from strong bonds developed within the family and to the community, as measured by family social capital. Yet little is known about the degree of family social capital youth at risk for poor academic outcomes experience over time. This study seeks to identify and describe trajectories of family social capital among high-risk youth as they move from middle through high school. In particular, this study examines differences in academic performance outcomes and neighborhoods by trajectory group.

Social capital

The notion of social capital has become indispensable to understanding how collective, social processes affect normative behaviors and opportunities for success. Social capital, as defined by Coleman (1988), is about how relations between people facilitate action. Close relationship bonds, formed on the basis of trust, reciprocity, and networks, give members the ability to accomplish something that "non-members" might not.

Importantly, social capital is a group-level construct measured across members (i.e., of a neighborhood, workplace, family, etc.) or even across groups of these communities, which

ultimately benefits the individual. Portes (1998) likened social capital to an "investment strategy" in which group relations function as a resource to the individual. The types of ties that people form with others are typically distinguished as strong, "bonding" ties or as being weak and "bridging" (Putnam, 2004). Bonding ties refer to densely connected relationships, as within families and relatives, which serve for daily functioning. Bridging ties, on the other hand, refer to connections loosely maintained across social groups. The depth of the relationship is not necessarily as important as the number of social groups that can bridge the individual to other social groups and opportunities for advancement. In this sense, it matters both who you know and how many groups you know.

Researchers have linked high social capital to a variety of positive outcomes, such as high civic engagement (Putnam, 2000), low community violence (Patton & Johnson, 2010), better mental health (Araya et al., 2006), positive child psychosocial functioning (Dorsey & Forehand, 2003), and higher academic achievement (Porfeli, Wang, Audette, McColl, & Algozzine, 2009). In a review of the public health literature, Szreter and Woolcock (2004) staked out three conceptual views of social capital, namely as a social support mechanism, an indicator of inequality, and a political device for excluding access to a population. These theoretically distinct views, they argue, have posed methodological challenges. Depending on its intended use, social capital might be represented alternatively through measures of social cohesion, social control, social support, social deprivation, or collective efficacy. This breadth of application of the construct makes comparisons across studies challenging but not impossible. Certainly, the call for the development of a set of core indicators would aid in clarifying concepts most relevant to the analysis (Macinko & Starfield, 2001). Others have suggested the inclusion

of infrastructure and policy measures, especially in understanding the relation between social capital and the physical environment (Wood & Giles-Corti, 2008).

Family social capital

Families generate social capital. Coleman (1988) recognized the ability of parents to establish norms for behavior, close ties, expectations and obligations amongst family members, defined as *family social capital*. In addition to a family's bonding ties are its bridging ties to schools and religious organizations. Coleman emphasized that parents' increased engagement with schools, notably at private schools versus public schools, strengthened family social capital and promoted academic achievement and high school completion. Other studies have found higher family social capital associated with gains in math and reading achievement (McNeal Jr, 1999; Parcel & Dufur, 2001). Religious participation, too, has had a salutary effect on educational attainment (Muller & Ellison, 2001). Fan (2008) posited that religious participation improved academic achievement because parents invested in their child's moral development, a form of social capital.

While parents contribute to bridging and bonding ties within the family, it is not clear whether family social capital is undermined by changes in family structure or neighborhoods. Generally, youth who experienced change from living with both parents to a single parent had worse academic outcomes, with lower educational attainment in the first generation of divorce (Amato & Cheadle, 2005) and higher high school dropout rates (Andresen et al., 2006; Pong & Ju, 2000), than youth living in two-parent households. Madyun and Lee (2010) found that African-American youth living with single parents were more likely to attend religious services, but youth in two-parent households tended to discuss schooling more often than youth in single-parent households. Some research has supported the presence of two parents, whether biological

or step, in forging strong family bonds that translated into higher reading and math change scores (Shriner, Mullis, & Schlee, 2009).

Divorce, however, can precipitate changes in the neighborhood environment through residential moves. Families experiencing divorce moved to significantly poorer neighborhoods than families experiencing no change (South, Crowder, & Trent, 1998). Living in a poorer neighborhood might worsen academic and behavioral outcomes for some youth. Neighborhood disadvantage had a differential effect on a sample of African-American youth, with the risk of high school dropout increasing significantly with increasing neighborhood disadvantage among boys, but not girls (Crowder & South, 2003). In this study, the social networks formed through moves to highly disadvantaged neighborhoods were shown to increase social contact and cohesion among boys, possibly through gang membership. In such a case, gangs might represent bonding ties for the members but also fewer bridging ties to positive role models in the community. Higher aggression boys, in particular, might have a greater need for family social capital to counterbalance negative influences of the neighborhood and peer environments.

To our knowledge, no studies have examined how family social capital changes over time in relation to changes in family structure among high-aggression youth. Further, there is a need to describe neighborhood characteristics salient to different patterns in family social capital. While evidence has generally supported the positive influence of family social capital on academic performance, these studies have been cross-sectional. More longitudinal research is needed to examine concurrent patterns of family social capital and academic performance indicators.

Purpose

The present study has three objectives. The first objective is to identify and describe trajectories of family social capital across middle and high school among high-risk youth. Scales used to calculate the social capital index were religious capital, parental support for non-aggressive solutions, family problem solving, parental involvement in school, supervision and rules, and family cohesion. I also tested whether changes in parental structure, on account of divorce, marriage, remarriage or death, distinguished membership in a particular family social capital trajectory. The second objective is to examine whether academic performance outcomes—academic achievement, personal value on achievement, and high school dropout—differ by social capital trajectories. I hypothesize that high-risk youth living in families with higher family social capital will have better grades, place more value on achievement, and drop out of high school at lower rates than youth with lower family social capital. Because parent-child interactions that influence family social capital take place within a broader living context, the third objective is to investigate how neighborhood characteristics (level of advantage, availability of educational and social resources, and observable quality) and the number of residential moves differ by family social capital trajectories. I postulate that higher family social capital is likely associated with more positive neighborhood characteristics and fewer moves.

Methods

Sample and Research Design

The sample consisted of 176 youth nominated by teachers in Grade 6 for being high in physical aggression and influential among peers. The youth participated in the *Healthy Teens Longitudinal Study*, a CDC-funded project whose objective was to understand risk and protective factors associated with developmental trajectories of aggression-related behaviors. *Healthy*

Teens participants completed yearly surveys from middle school through high school (2002-2009) in six counties of Northeast Georgia. Youth who dropped out of high school completed surveys at home or at another agreed location. Investigators surveyed parents of high-risk participants during Grades 6 through 8. Neighborhood data were added after completion of *Healthy Teens* data collection.

In Grade 6, teachers identified 292 sixth graders to participate in the study. Of these targeted students, 222 (76%) accepted to participate. In ninth grade, 176 (79%) of all participants invited to continue in the study were located and agreed to participate. Youth not continuing to take part in the study did not differ significantly by gender from youth reconsenting to take part. Attrition led to some significant differences in sample characteristics. Significantly more Caucasian students did not continue in the study than African-American and Latino students. Students from one middle school dropped out of the study at a higher rate than at all other participating middle schools, although the actual number of students (5) is small.

The sample consisted of a majority of boys (66%), and African-American (65%), followed by Caucasian (24%) and Latino (7%) students. From the total sample, 36% of the students (n=61) dropped out of high school by Grade 12. Eleven percent of parents reported that a member of the household had received a university or postgraduate degree. Over two-thirds of the parents (77%) reported a household income before taxes that was approximately below the median household income for Georgia. This measure of median income was based on responses from the 2003 survey in which parents selected the income category that best represented their total income before taxes in the preceding 12 months. Income categories below $40,000 were coded as below Georgia's median household income of $42,887, based on census 2000. A majority of students (61%) lived in neighborhoods with some advantage, 27% in average

advantage, 7% lived in disadvantaged neighborhoods and 6% lived in extremely disadvantaged neighborhoods.

Procedures

The study received approval for all data collection procedures through the University's Institutional Review Board. During Grades 6 through 8, a parent or caretaker assented to participate. Parents granted permission for his or her child to participate in the study in Grades 6 and 9; youth assented to study participation at each data collection point.

Participant sampling occurred as part of a violence prevention initiative led by the Multisite Violence Prevention Project (MVPP) among sixth graders and their families (Henry & Farrell, 2004). The goal of the initiative was to provide evidence for the efficacy of a community-based and universal intervention to reduce violence among a randomly selected sample and a targeted sample of students. For the latter sample, teachers identified youth in Grade 6 who were at increased risk of violence-related behaviors based on their aggressive behaviors (i.e., encouraged others to fight, intimidated other students, became angry easily, and frequently engaged in physical fights) and influential effect on peers (i.e., other students listened to them about what is good or cool, set trends among peers, appeared respected by peers, and were imitated by peers) (Miller-Johnson, Sullivan, & Simon, 2004). To decrease subjectivity, ratings of two teachers were used to score students.

Measures

Family Social Capital Index

The family social capital index was calculated using six scales measuring religious capital, parental support for non-aggressive solutions, family problem solving, parental involvement in school, supervision and rules, and family cohesion. In an effort not to over-

identify youth at risk for a particular negative outcome (Esbensen, Peterson, Taylor, & Freng, 2009) or, as in this case, youth with protective assets, investigators examined responses by the top percentile ranking. Students scoring in the 70th percentile on each scale received a score of "1," while scores below the percentile threshold received a score of "0," a dichotomizing procedure considered advantageous for measures of psychosocial factors (Farrington & Loeber, 2000). Scale threshold values were calculated at each time point. The family social capital index is a sum of the dichotomously scored subscales, with a maximum value of six and a minimum value of zero. Internal reliability coefficients (Cronbach's α) for subscales were calculated based on responses from the present sample at each time point, with ranges across the seven measurement points presented.

The *religious capital* scale (2 items; Cronbach's α = 0.63 to 0.79) consists of questions asking students whether family members 1) attended religious services (church, synagogue, Sunday school, or other religious activities) fairly often, and 2) talked often about the meaning of religious holidays (Christmas, Passover or other holidays). Responses ranged on a 4-point scale, with 1 = *Not true*, 2 = *Hardly ever true*, 3 = *True a lot*, and 4 = *Always or almost always true*. Higher values indicate higher religious capital.

Parental support for non-aggressive solutions (5 items; Cronbach's α = 0.71 to 0.80) measures students' perception of parental support for solving conflicts by non-aggressive means. With items originally based on focus group responses in the Students for Peace Project (Orpinas et al., 2000; Orpinas, Murray, & Kelder, 1999), students responded *yes* or *no* to statements relating to the question, "Does your parent tell you these things about fighting?" Examples of peaceful solutions are, "If someone calls you names, ignore them." and "If someone asks you to

fight, you should try to talk your way out of a fight." Scores are based on a mean item response, with higher scores indicating stronger parental support for non-aggressive solutions.

Family problem solving (6 items; Cronbach's α = 0.87 to 0.94) is a subscale of the Family Assessment Device (Kabacoff, Miller, Bishop, Epstein, & Keitner, 1990) on family functioning. The *family problem solving* scale relates to how often family members confront family problems and carry out solutions in a unified manner. The scale consists of statements such as, "We resolve most everyday problems around the house." and "After our family tries to solve a problem, we usually discuss whether it worked or not." Responses ranged from *never* to *almost always* on a four-point scale. Higher mean scores reflect better family problem solving abilities.

Parental involvement in school (6 items; Cronbach's α = 0.78 to 0.89) measures how often youth perceive that their parents take part in school events and interact with their teachers, as adapted from measures created by Smith et al. (1997) and Eccles and Harold (1993). Youth responded to six questions on a four-point scale ranging from *never* to *almost always*. Questions were "How often does a parent talk with one of your teachers?", "How often does your parent attend functions at your school like open house, fund-raisers, PTA meetings, and the like?", "How often does your parent volunteer to help at a school-related function, like a field-trip, athletic game, or other event?", "How often does your parent attend parent-teacher conferences when they are scheduled by your school?", "How often does your parent contact your school to request a meeting with a teacher or school official?", and "How often does your parent call a teacher on the telephone or write a note concerning your schoolwork?" Higher scores indicate stronger parental involvement in school.

A subscale of the parenting practices scale originally created for the Pittsburgh Youth Study (Loeber et al., 1999) to measure parental discipline and monitoring, *supervision and rules* (2 items; Cronbach's α = 0.66 to 0.85) consists of separate questions on the frequency that parents had set a curfew for school nights and a curfew for weekend nights, in the 30 days prior to the assessment. Youth responded either *no set time*, *sometimes set time*, or *always set time*. Higher scores indicate higher likelihood that youth had rules about times that parents expected them home at night.

Family cohesion (10 items; Cronbach's α = 0.86 to 0.93) measures how youth perceive family communication and closeness. The *family cohesion* scale was adapted from the Family Relationship Scale (Gorman-Smith, Tolan, Zelli, & Huesmann, 1996). Examples of statements are "My family knows what I mean when I say something." and "Family members ask each other for help." Response categories were 0 = *not at all true*, 1 = *hardly ever true*, 2 = *true a lot*, and 3 = *almost always or always true*. Higher scores indicate higher family cohesion.

Parental Structure

At every measurement time point, students indicated the adults who lived in their homes. Responses were coded dichotomously as 1 = *living with two parents, either biological or step*, and 0 for remaining response categories.

Academic Performance

Three measures of academic performance were academic achievement, personal value on achievement, and high school dropout.

Reflecting on their perceived *academic achievement*, students responded to the question, "What kinds of grades have you received so far this semester?" Response categories were coded to values reflecting grade point averages as follows: 95 = *mostly As*, 85 = *mostly As and Bs*, 75=

mostly Bs and Cs, 65 = *mostly Cs and Ds*, and 55 = *mostly Ds and Fs*. Academic achievement is the mean of these numeric values.

The *personal value on achievement* scale (9 items; Cronbach's α = 0.85 to 0.91) measures the importance placed on achieving particular goals in an academic setting. All items begin with the words "How important is it to me…" Examples of questions are "How important is it to me … to get at least a B average this year" and "How important is it to me … to do better on tests than most of the other students?" Students responded on a 4-point scale with 1 = *Not important*, 2 = *Slightly*, 3 = *Very*, and 4 = *Extremely important*. The scale score consists of the mean of the nine items, with higher scores indicating higher value placed on personal achievement.

Healthy Teens participants were coded 1 = *dropout* or 0 = *non-dropout* depending on their educational enrollment status. For the purposes of this study, high school dropout was defined as youth no longer enrolled in high school or any other educational institution. Also categorized as dropout were youth seeking to earn a general educational development (GED) certificate, youth enrolled in job corps, and youth expelled from high school. Alternatively, youth were categorized as non-dropout if attending a public, private, or alternative school; were home-schooled; or had already attained a high school diploma or GED certificate.

Neighborhood

Four measures were used to characterize the social and physical environment of participants: neighborhood disadvantage, institutional resources, neighborhood quality, and residential moves.

The *Neighborhood Disadvantage Index* (NDI) indicates the level of advantage within a neighborhood, defined as a 1-mile radius surrounding the study participant's residence. Four

census 2000 block group indicators were used: number of households with children under 18 years, number of female householders with children under 18 years, number of vacant housing units, and number of persons with income in 1999 below poverty level. Each indicator was normed using census 2000 block group data for Georgia. A principal components analysis of these indicators resulted in a NDI z-score for each student. Hierarchical and non-hierarchical cluster analyses were performed using NDI values, which resulted in four types of neighborhoods. The 4-cluster solution was coded as 1 = *Extreme disadvantage*, 2 = *Disadvantage*, 3 = *Average*, and 4 = *Some advantage*.

The *youth resources scale* is an indicator of the number of institutional resources within a two-mile radius from a participant's place of residence. A search of the online consumer database ReferenceUSA (http://www.referenceusa.com/Home) by standard industrial classification (SIC) code produced addresses of institutional resources within study counties. Resources reflected either positive qualities for youth development, termed "amenities" (youth organizations and centers, youth ministries, recreation centers, parks, educational programs, educational centers, libraries, and churches), or negative qualities, termed "detractions" (liquor retail outlets, bars, convenience stores, pawnbrokers, and title pawns). Addresses of resources were geocoded using BatchGeo (http://batchgeo.com/) and mapped using ArcGIS 9.3.1 version software. The mean number of resources falling within buffer zones surrounding a participant's residence indicates the level of resources within a youth's neighborhood.

Adapted from an instrument developed for systematic social observations by Zenk, Schulz, House, Benjamin, and Kannan (2005a), the *neighborhood observation checklist* (NOC) provided the basis for a cumulative index measuring neighborhood quality. The NOC consisted of 33 items on aspects of the built and social environments. For creation of the index, conditions

indicating poor neighborhood quality received a dichotomous coding and were summed. Indicators of poor neighborhood quality were presence of the following: poor vacant lot condition, broken-down cars, alcohol containers, discarded cigarettes, advertisements for tobacco and alcohol, police, trash, graffiti, homes in disrepair, poorly maintained yards, poorly maintained roads, noise, stray dogs, strong odors, dirt as air pollution, and semi-trucks on roads. Higher scores on the neighborhood quality index indicate worse neighborhood quality, with a maximum score of 17 and a minimum of zero.

Residential moves correspond to the number of addresses in the system tracking each *Healthy Teens* participant. The maximum value is five — indicating five or more addresses recorded during the seven years of the study — and the minimum value is one.

Statistical analysis

To address the first objective, a semi-parametric group-based modeling approach was used to identify family social capital trajectories. The procedure consists of a SAS macro called PROC TRAJ (Jones, Nagin, & Roeder, 2001), which is particularly suited for estimating developmental trajectories where individuals fall into relatively homogeneous subgroups based on patterns of change over time. The procedure offers advantages over single-group estimates which use overall mean values by allowing for greater heterogeneity due to individual variation. A zero-inflated Poisson (ZIP) model was used to fit the conditional distribution of the data since the family social capital index consisted of count data and more zeros than expected under the Poisson distribution (Lambert, 1992). With PROC TRAJ, it is possible to model the change in family social capital up to a fourth-order polynomial as:

$$\ln(\lambda^{j}_{it}) = \text{Age}_{it} + \beta^{j}_{1}\text{Age}_{it} + \beta^{j}_{2}\text{Age}^{2}_{it} + \beta^{j}_{3}\text{Age}^{3}_{it} + \beta^{j}_{4}\text{Age}^{4}_{it}$$

where λ^{j}_{it} is the expected index count for subject *i* at time *t* given membership in group *j*; Age_{it} is participant *i*'s age at time *t*. The shape of a trajectory is modeled using coefficients $\beta^{j}_{1} \ldots \beta^{j}_{4}$ (Jones & Nagin, 2007).

The decision about the number of groups to retain is based on several criteria, namely the Bayesian Information Criterion (BIC), posterior probabilities, and recommended minimum trajectory group sample size. With the first criteria, the BIC approximates the log factor of the Bayes Factor so that the change in BIC between two models being compared is approximately equal to -2 times the log of the likelihood of the j + 1 group minus the log of the likelihood of the j group model. While not considered the only test statistic for model fit, the BIC value is considered a good indication of the most parsimonious model and optimal number of groups (Nagin, 2005). In addition, doubt in assignment of trajectory membership is measured post hoc using average posterior probabilities. This measure of internal reliability is calculated using the maximum probability assignment rule for an individual assigned to a group, with average posterior probabilities greater than 0.70 to 0.80 indicating good discriminatory ability (Andruff, Carraro, Thompson, Gaudreau, & Louvet, 2009). Finally, it is recommended that the sample size of a given trajectory be above 5% of the total sample size (Andruff et al., 2009).

By adding time-varying covariates, I extended the group-based model to include "turning point events" (Jones & Nagin, 2007) which were, in this case, changes in parental structure. Within the PROC TRAJ procedure, the PLOTTCOV function directs PROC TRAJ to estimate trajectories based on whether or not the individual has a change in parental structure from one measurement time point to the next. In this model, the effect of changes in parental structure may vary freely across trajectory groups, allowing for differential effects. The formula is an extension of the previous model and is written as follows:

$$\ln(\lambda^{j}_{it}) = \text{Age}_{it} + \beta^{j}_{1}\text{Age}_{it} + \beta^{j}_{2}\text{Age}^{2}_{it} + \beta^{j}_{3}\text{Age}^{3}_{it} + \beta^{j}_{4}\text{Age}^{4}_{it} + \alpha^{j}_{1}\text{Parents}_{it}$$

where $Parents_{it}$ is a dichotomous indicator that has a value of one for a two-parent household for subject *i* in time period *t*.

To address the second objective, SAS PROC MIXED was used to explore how academic performance variables measured longitudinally varied across trajectory groups. This procedure allows modeling of fixed and random effects to take into account inter- and intra-individual variation in response data (Singer, 1998). In this sense, longitudinal measurements are nested within the individual so that multilevel models would best account for intra-individual correlations. In other words, the individual is modeled at Level 2 (between-person), and the repeat measures are modeled at Level 1 (within person). The Level-1 and Level-2 unconditional growth models can be written separately and then combined into the full model as:

Level-1 model

$$Y_{ij} = \beta_{0j} + \beta_{1j}(\text{TIME})_{ij} + e_{ij}$$

Level-2 model

$$\beta_{0j} = \Upsilon_{00} + e_{0j}$$
$$\beta_{1j} = \Upsilon_{10} + e_{1j}$$

Full model

$$Y_{ij} = (\Upsilon_{00} + \Upsilon_{10}\text{TIME}_{ij}) + (e_{0j} + e_{1j}\text{TIME}_{ij} + e_{ij})$$

The full model contains two fixed effects (intercept and effect of TIME) and two random effects (intercept and TIME slope), plus error (within-person residual e_{ij}). For this model, the dataset is restructured to person-period, meaning that each person has one or more records, with each record corresponding to an observation at a time point. The PROC MIXED procedure uses several statements to specify the unconditional linear growth model. The RANDOM statement consists of the intercept and time of the individual observation. In this model, TIME 0

corresponds to Grade 6. The REPEATED statement specifies the covariance correlation structure.

In a mixed model, it is important to identify the covariance patterns of the residuals correctly. Otherwise, misspecification of the type of correlations within the variance can result in incorrect standard errors and lead to false inferences (Fitzmaurice, Laird, & Ware, 2004). The types of covariance patterns considered for the error covariance are unstructured (UN), compound symmetry (CS), and autoregressive (AR) covariance correlation patterns. Selection criteria for the covariance matrix structure can be based on several goodness-of-fit statistics: Akaike Information Criterion (AIC), Bayesian Information Criterion (BIC), Schwarz's Bayesian Criterion (SBC), etc. The present study uses the model with the lowest BIC value.

To address the third objective, differences in neighborhood characteristics by trajectory group were examined using one-way analysis of variance (ANOVA). The ANOVA procedure tested for statistically significant differences in the means for neighborhood disadvantage, institutional resources (amenities and detractions), neighborhood quality, and residential moves using family social capital trajectories as the grouping variable.

Results

Table 4.1 presents the mean and standard deviation of the family social capital index for each grade, examined cross-sectionally. On average, individuals within a grade scored in the 70^{th} percentile for about two items on the family social capital index, and the mean number of items varied only slightly from year to year.

Table 4.1 Family social capital index (mean/standard deviation) by grade

	Family social capital index	
Grade	N	Mean (SD)
6	165	1.98 (1.46)
7	166	1.84 (1.49)
8	170	1.86 (1.64)
9	158	1.96 (1.77)
10	163	1.72 (1.49)
11	154	1.96 (1.64)
12	157	1.83 (1.53)

The trajectory analysis showed that not all youth followed the same predicted family social capital trajectories and possessed equal probabilities of membership in a given group. Table 4.2 lists differences in BIC, the value used to determine the number of underlying groups in the data. The negative difference in the $2\log_e(B_{10})$ between the 4-group and 3-group models, resulting in the highest BIC value (-1859.57), gave support to a 3-group model for best model fit. The average posterior probabilities supported good group discrimination, ranging from 0.89 to 0.91 (see Table 4.3). The model specified a linear trajectory for the two highest family social capital groups, indicating that family social capital maintained high and medium levels, respectively, throughout the measurement periods. The model specified a quadratic trajectory for the lowest family social capital group. Figure 4.1 plots the predicted and observed trajectories of the three groups.

Members of Group 1, termed "low family social capital," started low on the family social capital index (mean=0.45, SD=0.27) and dipped slightly at the end of middle school and beginning of high school. About one-fifth of the sample (19%) comprised the low family social capital group (n=34; 55.9% boys; 20.6% Caucasian, 70.6% African-American, 8.8% Latino). As for socio-economic characteristics, only 6.3% of households had at least one member with a university or postgraduate degree; 18.8% of households reported being above the median household income.

Members of Group 2, termed “medium family social capital,” followed a relatively stable trajectory (mean=1.53, SD=0.12). Almost half of the sample (49%) comprised the medium family social capital group (n=87; 74.7% boys; 26.4% Caucasian, 63.2% African-American, 3.4% Latino, and 6.9% other). Slightly more household members than Group 1 held university or postgraduate degrees (7.7%) but slightly fewer households (16.7%) reported being above the median household income.

Members of Group 3, termed “high family social capital group,” had the highest average scores for the family social capital index (mean=3.28, SD=0.21), a mean just above the median for the six-point family social capital index. Less than a third of the sample (31%) comprised the high family social capital group (n=55; 58.2% boys; 21.8% Caucasian, 65.5% African-American, 10.9% Latino, and 1.8% other). The high family social capital group contained the highest percentage of households with a university or postgraduate degree (16.7%) and above-median household income (33.3%).

To examine whether parental structure affected the probability of trajectory membership, the model was re-estimated with the addition of parental structure as a time-varying covariate. Adding the covariate did not significantly change the probability of trajectory membership for Group 1, *z-score*=0.83, *p*=0.41, Group 2, *z-score*=1.48, *p*=0.14, or Group 3, *z-score*=0.63, *p*=0.53. The results did indicate, however, a general trend towards more two-parent households in higher family social capital groups. Because of the lack of statistically significant findings, family social capital groups were based on parameter estimates and group assignment from the unconditional model.

Table 4.2 BIC and $2\log_e(B_{10})$ of models considered

No. of Groups	BIC	Null model	$2\log_e(B_{10})$
1	-2020.27		
2	-1878.49	1	283.56
3	-1859.57	2	37.84
4	-1865.74	3	-12.34

Table 4.3 Average posterior probabilities of group membership

	Family social capital		
Group	Low	Medium	High
1	0.89	0.04	0.00
2	0.11	0.89	0.09
3	0.00	0.07	0.91

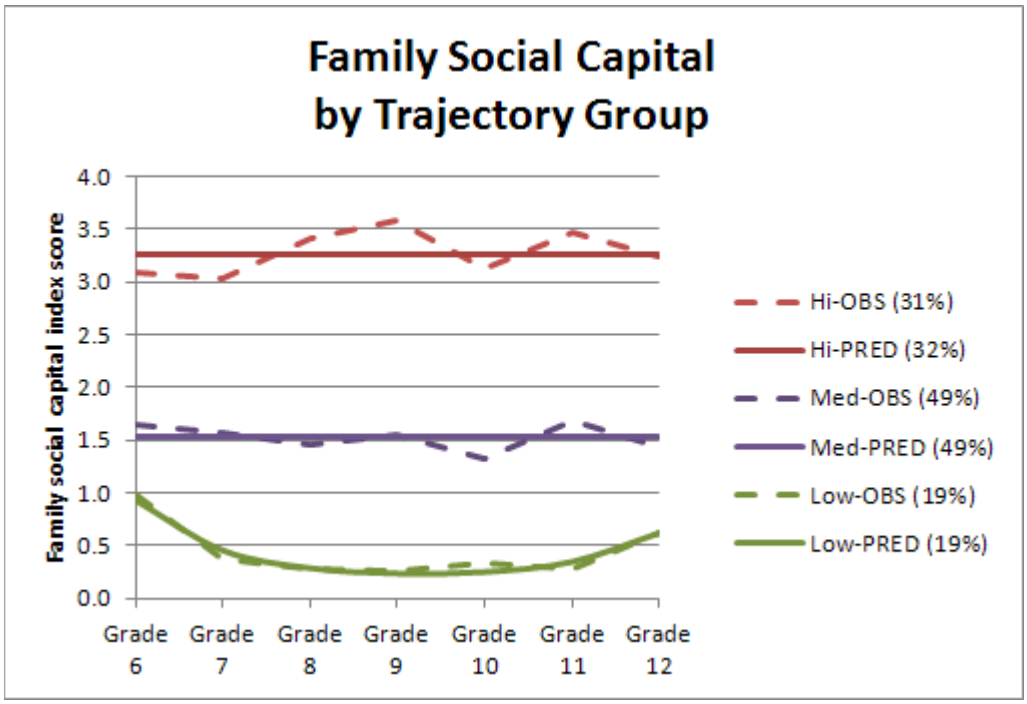

Figure 4.1 Three-group trajectory solution using zero-inflated Poisson model

In comparisons of groups by demographic characteristics, groups differed significantly by gender, $\chi^2(2) = 6.0$, p=0.05. Boys comprised two-thirds of the medium family social capital group; girls comprised a similar proportion of the low and high family social capital groups (44% and 42%, respectively). Groups did not vary significantly by race/ethnicity, $\chi^2(6) = 7.6$,

p=0.27, highest education level achieved by a household member, $\chi^2(2) = 3.1$, p=0.22, or above-median household income, $\chi^2(2) = 5.2$, p=0.08.

Academic Performance by Trajectory Group

Academic achievement

A linear model using an autoregressive covariance pattern for the error was selected based on the lowest BIC value for best model fit. Academic achievement did not vary significantly over time by levels of family social capital, $\chi^2(4)=8.09$, p=0.09. Table 4.4 lists the intercepts and slope estimates for the fixed effects. The intercepts for each of the three groups were significantly different from zero in the population, with the lowest family social capital group having the lowest average grade (76) across persons, followed by the medium family social capital group with an average of 77, and the high family social capital group with an average of 79. Based on non-significant p-values for slope estimates, I rejected the null hypothesis that grades changed significantly across persons over time within the respective family social capital groups.

Table 4.4 Estimates of fixed effects (intercept and slope) for unconditional linear growth model of academic achievement

Group	Intercept (SE)	DF	t value	p-value	Slope (SE)	DF	t value	p-value
Low	75.57 (1.22)	770	62.12	<.0001	0.35	770	1.21	0.23
Medium	77.09 (0.81)	770	94.63	<.0001	0.01	770	0.05	0.96
High	79.23 (0.96)	770	82.55	<.0001	-0.08	770	-0.35	0.73

Personal value on achievement

To examine differences in personal value on achievement longitudinally, a linear model using an autoregressive covariance pattern was considered the best fit. Models using compound symmetry and unstructured covariance structures did not converge.

Personal value on achievement varied significantly over time across people within respective family social capital groups, $\chi^2(4) = 15.22$, $p=0.004$. In contrasts between groups, persons within low and high family social capital groups differed significantly in value on achievement, $\chi^2(2) = 8.96$, $p=0.01$, as did persons within the medium and high family social capital groups, $\chi^2(2) = 12.90$, $p=0.002$. Persons within low and medium family social capital trajectory groups did not differ significantly from one another in value on achievement, $\chi^2(2) = 0.63$, $p=0.73$. Table 4.5 lists fixed effects estimates, showing statistically significant differences from zero in the populations for the intercepts and slopes. The low family social capital group had the lowest average value on achievement across persons (3.2), followed by the medium family social group (3.3), and the high family social capital group (3.5). Individual growth rates changed significantly for the respective family social capital groups. Minimal negative slope estimates indicated a slight downward trend in value on achievement over time for members of each family social capital trajectory group.

Table 4.5 Estimates of fixed effects (intercept and slope) for unconditional linear growth model of personal value on achievement

Group	Intercept (SE)	DF	t value	p-value	Slope (SE)	DF	t value	p-value
Low	3.22 (0.11)	623	28.63	<.0001	-0.07	623	-2.57	0.01
Medium	3.32 (0.05)	623	62.62	<.0001	-0.09	623	-6.48	<.0001
High	3.53 (0.07)	623	50.68	<.0001	-0.07	623	-3.78	0.0002

High school dropout

There was no statistically significant difference in the number of individuals who dropped out of high school by family social capital group, $\chi^2(2) = 2.21$, $p=0.33$. The medium family social capital group contained the highest proportion of dropouts (41%), compared to the low (28%) and high trajectory (32%) groups. Because of significant gender differences in trajectory membership, data were analyzed by gender, but the proportion of boys who dropped

out (33%, 44%, and 32% for low, medium, and high family social capital trajectories, respectively) was not significantly higher than for girls (21%, 33%, 32% for low, medium, and high family social capital trajectories, respectively).

Neighborhood Characteristics by Trajectory Group

In comparisons of mean differences by social capital trajectory groups, neighborhoods did not differ significantly in their levels of disadvantage, $F(2,162) = 0.17$, $p = 0.85$, number of amenities, $F(2,162) = 0.31$, $p = 0.73$), number of detractions, $F(2,162)=0.28$, $p = 0.76$, observable poor quality, $F(2,144) = 0.50$, $p = 0.61$, or number of residential moves, $F(2,142) = 1.36$, $p = 0.26$. Table 4.6 lists the means and standard deviations of neighborhood characteristics by trajectory group.

Table 4.6 Neighborhood characteristics (mean, SD) by trajectory group

	Family social capital trajectories			
	Low	Medium	High	
Neighborhood disadvantage	0.27 (1.22)	0.17 (1.13)	0.12 (1.26)	N.S.
Youth resources				N.S.
Amenities	17.81 (19.36)	15.17 (18.45)	14.61 (19.16)	
Detractions	14.22 (19.43)	11.98 (16.27)	11.41 (17.65)	
Poor neighborhood quality	2.20 (2.95)	2.30 (2.31)	2.74 (2.98)	N.S.
Residential moves	2.14 (1.13)	2.48 (1.32)	2.12 (1.30)	N.S.

N.S. = not significant

Discussion

The objectives of this study were to identify and describe trajectories of family social capital, examine whether academic performance outcomes differed by trajectories, and investigate differences in neighborhood characteristics by trajectories. Few studies have examined family social capital within a sample of youth identified at high risk for aggression.

This study contributes to understanding family social capital as a multidimensional construct that distinguishes high-risk youth over the course of middle and high school.

Clearly, based on findings in the first set of analyses, high-risk youth followed distinct trajectories of family social capital through middle and high school. Consistent with other cross-sectional studies, investigators have identified varying levels of social capital among children within a particular elementary grade (Parcel & Dufur, 2001), and among elementary schools within an urban school district (Porfeli et al., 2009). Few researchers have used longitudinal data to examine social capital trajectories, with the notable exception of one study that used two time points of social capital measures (Shriner et al., 2009). The present study examined measures of family social capital at seven time points to identify trajectories. It is also worth mentioning that the youth sampled in this study underwent an intervention in middle school that significantly reduced norms for aggression and self-efficacy for nonviolent responses (Simon et al., 2008). These effects were across the entire sample, however, and should not bias estimates of social capital trajectories.

An additional strength of this study was the development of a social capital index that tapped into several dimensions of family social capital. In other studies, single dimensions of family social capital, such as parental monitoring (Laird, Criss, Pettit, Bates, & Dodge, 2009) or parent's knowledge of their child's activities (Laird et al., 2008), were used to distinguish youth trajectories. By giving equal weight to six respective scales, the family social capital index encompasses both internal family processes, such as family problem-solving, supervision, and cohesion, and (external) networking processes created through contact with schools and religious institutions. In this way, a youth can still have high family social capital even if the family has few church contacts because of strong internal family relationships.

Admittedly, a certain degree of arbitrariness exists in restricting social capital to a single conceptual domain of family. The choices families make can depend on the financial or community resources available to them. Indeed, economists themselves struggle to reconcile objective economic household data with subjective individual preferences, finding themselves tasked with explaining how social interactions should matter (Manski, 2000). For this reason, investigators often include the closely related concept of community-based social capital, with measures of human capital and financial capital, to explain differences in academic outcomes (Porfeli et al., 2009). Further research is needed on how family-based and community-based social capital interrelate (Furstenberg, 2005).

Whether or not youth lived in a single-parent or two-parent household did not conclusively affect trajectory membership. The findings supported a general trend where two-parent households had higher family social capital, but the association did not reach statistical significance. Indeed, studies have shown the salutary effects of a two-parent household over single parent households in improving a youth's academic outcomes (Pong & Ju, 2000; Strohschein, Roos, & Brownell, 2009; Sun & Li, 2011). It is less clear whether disruptions in parental structure through step-parenting (Coleman, Ganong, & Fine, 2000) or divorce (Amato & Cheadle, 2005) might mediate the association. Few studies have successfully linked these aspects of parental structure to differences in family social capital (Furstenberg, 2005).

This study supported the hypothesis that youth with high family social capital place high value on markers of achievement. This finding is not altogether surprising. By virtue of its definition, social capital is about generating values that benefit the individual (Coleman, 1988), making value placed on achievement a logical extension of this concept. Researchers have shown that other types of values, as expressed through a family's religious involvement, for

example, had a positive influence on academic effort and reward in a large national sample of high school students (Muller & Ellison, 2001).

By placing high value on achievement, students primarily endorse good grades, favorable teacher recognition, and outperformance of peers. However, simply wanting to do better at school does not mean that students will achieve their goals. Elliott and Dweck (1988) framed this process by the type of learning goal — performance or mastery — that a student is trying to achieve. With performance goals, students want to *prove* their abilities; with mastery goals, students want to *improve* their abilities (Dweck & Leggett, 1988). The assumption that high value placed on academic achievement will result in better grades further overlooks the role that self-efficacy plays in academic motivation (Bandura, 1977). In other words, youth have the desire to achieve better grades, but they might not possess the competence, skills or environmental support (e.g., a home computer, access to the Internet, parents able to check homework) to reach their goals. Further research is needed on understanding the interrelationships between competence, value on achievement, mastery goals, and external support (Wigfield & Cambria, 2010), especially with respect to the generation of family social capital.

Contrary to study hypothesis, higher family social capital did not lead to better grades and lower dropout. The lack of statistically significant effect is inconsistent with a host of studies finding a positive association between social capital and academic achievement. It is important to note that many of these studies identify other forms of social capital that mediate the effects, such as cultural capital (Perreira, Harris, & Dohoon, 2006), peer capital (Ream & Rumberger, 2008), religious capital (Muller & Ellison, 2001), community capital (Porfeli et al., 2009), and school capital (Croninger & Lee, 2001; Parcel & Dufur, 2001; Wu, Palinkas, & He,

2010). These numerous forms of social capital highlight the potential misuse of the term as a catchall to describe social interactions, which might mask the effects of race, class and gender at school or in the community (Dika & Singh, 2002).

Based on the third set of analyses, neighborhoods of low family social capital youth were not measurably more disadvantaged or of poorer quality than neighborhoods of youth with higher family social capital. Generally, neighborhoods of youth with higher family social capital lived in more affluent neighborhoods but were worse in observable quality, although these associations did not reach statistical significance. In support of these mixed findings, Portes (2000) discredits propagation of the "myth" that disadvantaged neighborhoods are more socially disorganized and have lower social capital. Within disadvantaged and dangerous neighborhoods, researchers have cited the buffering effects of positive parenting, rather than social capital directly, on psychosocial adjustment (Dorsey & Forehand, 2003). In this sense, parenting behaviors are in response to the context of disadvantage, which in turn affects family relations and affiliations that build social capital (Furstenberg, 2005).

Throughout this study, it is important to acknowledge that the process of dropping out of high school can be a complex phenomenon in which multiple factors in a child's and youth's environment interact over time to influence the decision. This notion of cumulative risk from multiple domains has been used to explain increased likelihood of conduct problems, depression, and dropout among youth (Gerard & Buehler, 2004; Jimerson et al., 2000). The present study focuses on the family and neighborhood domains as a snapshot of the youth's ecology, in addition to individual and school-level influences on dropout. Findings support an approach taken by interventionists and those concerned with community development in identifying

developmental assets, sometimes termed “building blocks” (Benson, 1997), within a youth’s family and community that can foster positive development and health (Leffert et al., 1998).

Interpretations that can be made about neighborhood data are somewhat limited. Investigators did not gather participant reports on perceptions of neighborhood characteristics, such as social order, availability of resources, trust, safety, and participation in community organizations. Used as a measure of neighborhood context, individual reports can adequately distinguish neighborhoods by social capital (Subramanian, Lochner, & Kawachi, 2003). Efforts were made to increase reliability of observational data by having raters undergo standardized training, but whether these measures tap into the family social capital construct is unclear. Further studies are needed to understand the general trend showing higher family social capital in wealthier neighborhoods.

The relatively small sample sizes of each trajectory group limited power to detect statistically significant differences. In some analyses, results indicated a trend supporting the study hypothesis that youth with higher family social capital have better academic outcomes. Additional research is needed to substantiate these findings using larger longitudinal datasets.

In sum, high-risk youth have distinctly different trajectories of family social capital from middle to high school, which parental structure does not affect. The values and behaviors underlying family social capital translate into differences in the value youth place on academic achievement. Despite the desire to achieve better academic results than peers, at-risk youth with high family social capital failed to achieve significantly higher grades and complete high school more often than at-risk youth with lower family social capital. Further research is needed on how other forms of social capital, within the school or community, might increase the competence of these youth with high family social capital to achieve their academic goals.

Study findings imply the need for a multi-level approach to building family social capital that would encourage positive youth outcomes. Dominguez and Arford (2010) proposed social capital-based interventions at the micro-level to increase self-efficacy and youth development by strengthening connection to bonding networks, together with macro-level interventions to increase a community's collective efficacy. At school as well, teachers can build social capital among students at risk for dropping out, who benefit most from the networks of trust built around teacher guidance and support (Croninger & Lee, 2001).

References

Amato, P. R., & Cheadle, J. (2005). The long reach of divorce: Divorce and child well-being across three generations. *Journal of Marriage & Family*, *67*(1), 191-206. doi: 10.1111/j.0022-2445.2005.00014.x

Andresen, E. M., Malmstrom, T. K., Miller, D. K., & Wolinsky, F. D. (2006). Reliability and validity of observer ratings of neighborhoods. *Journal of Aging and Health, 18*(1), 28-36. doi: 10.1177/0898264305281001

Andruff, H., Carraro, N., Thompson, A., Gaudreau, P., & Louvet, B. (2009). Latent class growth modelling: A tutorial (Vol. 5, pp. 11-24).

Araya, R., Dunstan, F., Playle, R., Thomas, H., Palmer, S., & Lewis, G. (2006). Perceptions of social capital and the built environment and mental health. *Social Science & Medicine, 62*(12), 3072-3083.

Bandura, A. (1977). Self-efficacy: Toward a unifying theory of behavioral change. *Psychological Review, 84*(2), 191-215.

Benson, P. L. (1997). *All kids are our kids : What communities must do to raise caring and responsible children and adolescents*. San Francisco: Jossey-Bass.

Coleman, J. (1988). Social capital in the creation of human capital. *The American Journal of Sociology, 94*, S95-S120.

Coleman, M., Ganong, L., & Fine, M. (2000). Reinvestigating remarriage: Another decade of progress. *Journal of Marriage & Family, 62*(4), 1288-1307.

Croninger, R. G., & Lee, V. E. (2001). Social capital and dropping out of high school: Benefits to at-risk students of teachers' support and guidance. *Teachers College Record, 103*(4), 548-581. doi: doi:10.1111/0161-4681.00127

Crowder, K., & South, S. (2003). Neighborhood distress and school dropout: The variable significance of community context. *Social Science Research, 32*, 659-698.

Dika, S. L., & Singh, K. (2002). Applications of social capital in educational literature: A critical synthesis. *Review of Educational Research, 72*(1), 31-60.

Dominguez, S., & Arford, T. (2010). It is all about who you know: Social capital and health in low-income communities. *Health Sociology Review: The Journal of the Health Section of the Australian Sociological Association, 19*(1), 114.

Dorsey, S., & Forehand, R. (2003). The relation of social capital to child psychosocial adjustment difficulties: The role of positive parenting and neighborhood dangerousness. *Journal of Psychopathology and Behavioral Assessment, 25*(1), 11-23.

Dweck, C. S., & Leggett, E. L. (1988). A social-cognitive approach to motivation and personality. *Psychological Review, 95*(2), 256-273.

Eccles, J. S., & Harold, R. D. (1993). Parent-school involvement during the early adolescent years. *Teachers College Record, 94*(3), 568-587.

Elliott, E. S., & Dweck, C. S. (1988). Goals: An approach to motivation and achievement. *Journal of Personality and Social Psychology, 54*(1), 5-12. doi: 10.1037/0022-3514.54.1.5

Esbensen, F.-A., Peterson, D., Taylor, T. J., & Freng, A. (2009). Similarities and differences in risk factors for violent offending and gang membership. *Australian & New Zealand Journal of Criminology, 42*(3), 310-335. doi: 10.1375/acri.42.3.310

Fan, C. S. (2008). Religious participation and children's education: A social capital approach. *Journal of Economic Behavior and Organization, 65*(2), 303-317. doi: http://www.elsevier.com/wps/find/journaldescription.cws_home/505559/description#description

Farrington, D. P., & Loeber, R. (2000). Some benefits of dichotomization in psychiatric and criminological research. *Criminal Behaviour & Mental Health, 10*(2), 100.

Fitzmaurice, G. M., Laird, N. M., & Ware, J. H. (2004). *Applied longitudinal analysis*. Hoboken, N.J.: Wiley-Interscience.

Furstenberg, F. F. (2005). Banking on families: How families generate and distribute social capital. *Journal of Marriage & Family, 67*(4), 809-821. doi: 10.1111/j.1741-3737.2005.00177.x

Gerard, J. M., & Buehler, C. (2004). Cumulative environmental risk and youth maladjustment: The role of youth attributes. *Child Development, 75*(6), 1832-1849.

Gorman-Smith, D., Tolan, P. H., Zelli, A., & Huesmann, L. R. (1996). The relation of family functioning to violence among inner-city minority youths. *Journal of Family Psychology, 10*(2), 115-129. doi: 10.1037/0893-3200.10.2.115

Hemphill, S., Toumbourou, J., Catalano, R. F., & Mathers, M. (2004). Levels and family correlates of positive adolescent development: A cross-national comparison. *Family Matters*(68), 28.

Henry, D. B., & Farrell, A. D. (2004). The study designed by a committee: Design of the Multisite Violence Prevention Project. *American Journal of Preventive Medicine, 26*(1 Suppl), 12-19.

Jimerson, S., Egeland, B., Sroufe, L. A., & Carlson, B. (2000). A prospective longitudinal study of high school dropouts examining multiple predictors across development. *Journal of School Psychology, 38*(6), 525-549.

Jones, B. L., & Nagin, D. S. (2007). Advances in group-based trajectory modeling and an SAS procedure for estimating them. *Sociological Methods & Research, 35*(4), 542-571. doi: 10.1177/0049124106292364

Jones, B. L., Nagin, D. S., & Roeder, K. (2001). A SAS procedure based on mixture models for estimating developmental trajectories. *Sociological Methods & Research, 29*(3), 374-393.

Kabacoff, R. I., Miller, I. W., Bishop, D. S., Epstein, N. B., & Keitner, G. I. (1990). A psychometric study of the McMaster Family Assessment Device in psychiatric, medical, and nonclinical samples. *Journal of Family Psychology, 3*(4), 431-439. doi: 10.1037/h0080547

Laird, R. D., Criss, M., Pettit, G., Dodge, K., & Bates, J. (2008). Parents' monitoring knowledge attenuates the link between antisocial friends and adolescent delinquent behavior. *Journal of Abnormal Child Psychology, 36*(3), 299-310. doi: 10.1007/s10802-007-9178-4

Laird, R. D., Criss, M. M., Pettit, G. S., Bates, J. E., & Dodge, K. A. (2009). Developmental trajectories and antecedents of distal parental supervision. *The Journal of Early Adolescence, 29*(2), 258-284. doi: 10.1177/0272431608320123

Lambert, D. (1992). Zero-inflated poisson regression, with an application to defects in manufacturing. *Technometrics, 34*(1), 1-14.

Leffert, N., Benson, P. L., Scales, P. C., Sharma, A. R., Drake, D. R., & Blyth, D. A. (1998). Developmental assets: Measurement and prediction of risk behaviors among adolescents. *Applied Developmental Science, 2*(4), 209.

Loeber, R., Farrington, D. P., Stouthamer Loeber, M., Van Kammen, W. B., Lahey, B. B., Gordon, R. A., & Stouthamer-Loeber, M. (1999). Pittsburgh Youth Study Supervision/Involvement Scale. *Journal of Abnormal Child Psychology, 27*, 261-276.

Macinko, J., & Starfield, B. (2001). The utility of social capital in research on health determinants. *The Milbank Quarterly, 79*(3), 387-427.

Madyun, N. i., & Lee, M. (2010). Effects of religious involvement on parent-child communication regarding schooling: A study of black youth in the United States. *Journal of Negro Education, 79*(3), 295-307.

Manski, C. F. (2000). Economic analysis of social interactions. *Journal of Economic Perspectives, 14*(3), 115-136.

McNeal Jr, R. B. (1999). Parental involvement as social capital: Differential effectiveness on science achievement, truancy, and dropping out. *Social Forces, 78*(1), 117-145.

Miller-Johnson, S., Sullivan, T. N., & Simon, T. R. (2004). Evaluating the impact of interventions in the Multisite Violence Prevention Study: Samples, procedures, and measures. *American Journal of Preventive Medicine, 26*(1, Supplement 1), 48-61.

Muller, C., & Ellison, C. G. (2001). Religious involvement, social capital, and adolescents' academic progress: Evidence from the national education longitudinal study of 1988. *Sociological Focus, 34*(2), 155-183.

Nagin, D. (2005). *Group-based modeling of development*. Cambridge, MA: Harvard University Press.

Orpinas, P., Kelder, S., Frankowski, R., Murray, N., Zhang, Q., & McAlister, A. (2000). Outcome evaluation of a multi-component violence-prevention program for middle schools: The Students for Peace project. *Health Education Research, 15*(1), 45-58.

Orpinas, P., Murray, N., & Kelder, S. H. (1999). Parental influences on students' aggressive behavior and weapon-carrying. *Health Educ Behav, 26*(6), 774-787.

Parcel, T. L., & Dufur, M. J. (2001). Capital at home and at school: Effects on student achievement. [Article]. *Social Forces, 79*(3), 881-911.

Patton, D. U., & Johnson, D. W. (2010). Exposure to community violence and social capital: African American students in the critical transition to high school. *Harvard Journal of African American Public Policy, 16*, 53-72.

Perreira, K. M., Harris, K. M., & Dohoon, L. (2006). Making it in America: High school completion by immigrant and native youth. *Demography, 43*(3), 511-536.

Pong, S. L., & Ju, D. B. (2000). The effects of change in family structure and income on dropping out of middle and high school. *Journal of Family Issues, 21*(2), 147-169.

Porfeli, E., Wang, C., Audette, R., McColl, A., & Algozzine, B. (2009). Influence of social and community capital on student achievement in a large urban school district. *Education and Urban Society, 42*(1), 72-95.

Portes, A. (1998). Social capital: Its origins and applications in modern sociology. *Annual Review of Sociology, 24*(1), 1-24.

Portes, A. (2000). The hidden abode: Sociology as analysis of the unexpected. [Article]. *American Sociological Review, 65*(1), 1-18.

Putnam, R. D. (2000). *Bowling alone: The collapse and revival of American community*. New York: Simon & Schuster Paperbacks.

Putnam, R. D. (2004). Commentary: 'Health by association': Some comments. *Int. J. Epidemiol., 33*(4), 667-671. doi: 10.1093/ije/dyh204

Ream, R. K., & Rumberger, R. W. (2008). Student engagement, peer social capital, and school dropout among Mexican American and Non-Latino White students. *Sociology of Education, 81*, 109-139.

Shriner, M., Mullis, R. L., & Schlee, B. M. (2009). The usefulness of social capital theory for understanding the academic improvement of young children in stepfamilies over two points in time. *Journal of Divorce & Remarriage, 50*(7), 445-458. doi: 10.1080/10502550902970553

Simon, T. R., Ikeda, R. M., Smith, E. P., Reese, L. E., Rabiner, D. L., Miller-Johnson, S., . . . Allison, K. W. (2008). The Multisite Violence Prevention Project: Impact of a universal school-based violence prevention program on social-cognitive outcomes. *Prevention Science, 9*(4), 231-244. doi: DOI 10.1007/s11121-008-0101-1

Singer, J. D. (1998). Using SAS PROC MIXED to fit multilevel models, hierarchical models, and individual growth models. *Journal of Educational and Behavioral Statistics, 23*(4), 323-355.

Smith, E. P., Connell, C. M., Wright, G., Sizer, M., Norman, J. M., Hurley, A., & Walker, S. N. (1997). An ecological model of home, school, and community partnerships: Implications for research and practice. *Journal of Educational & Psychological Consultation, 8*(4), 339.

South, S. J., Crowder, K. D., & Trent, K. (1998). Children's residential mobility and neighborhood environment following parental divorce and remarriage. *Social Forces, 77*(2), 667-693.

Strohschein, L., Roos, N., & Brownell, M. (2009). Family structure histories and high school completion: Evidence from a population-based registry. *Canadian Journal of Sociology, 34*(1), 83-103.

Subramanian, S. V., Lochner, K. A., & Kawachi, I. (2003). Neighborhood differences in social capital: A compositional artifact or a contextual construct? *Health & Place, 9*(1), 33-44.

Sun, Y., & Li, Y. (2011). Effects of family structure type and stability on children's academic performance trajectories. *Journal of Marriage and Family, 73*(3), 541-556. doi: 10.1111/j.1741-3737.2011.00825.x

Szreter, S., & Woolcock, M. (2004). Health by association? Social capital, social theory, and the political economy of public health. *Int. J. Epidemiol., 33*(4), 650-667. doi: 10.1093/ije/dyh013

Wigfield, A., & Cambria, J. (2010). Students' achievement values, goal orientations, and interest: Definitions, development, and relations to achievement outcomes. *Developmental Review, 30*(1), 1-35.

Wood, L., & Giles-Corti, B. (2008). Is there a place for social capital in the psychology of health and place? *Journal of Environmental Psychology, 28*(2), 154-163.

Wu, Q., Palinkas, L. A., & He, X. (2010). An ecological examination of social capital effects on the academic achievement of Chinese migrant children. *British Journal of Social Work, 40*(8), 2578-2597. doi: 10.1093/bjsw/bcq051

Zenk, S. N., Schulz, A. J., House, J. S., Benjamin, A., & Kannan, S. (2005). Application of community-based participatory research in the design of an observational tool In B. Israel, E. Eng, A. Schulz & E. Parker (Eds.), *Methods in community-based participatory research for health* (pp. 167-187). San Francisco: Jossey-Bass.

CHAPTER 5

CONCLUSIONS

The purpose of this research was to examine the contextual influences on a youth's decision to drop out of high school based on characteristics of place and family. In other words, I hypothesized that features of the built and social environments, i.e. aspects within neighborhoods and among family members, would distinguish individual academic outcomes. Study One provided some support by finding higher neighborhood disadvantage and structural disrepair in neighborhoods of dropouts. The findings from Study Two were more ambiguous. The influence of a family's social processes over time, as measured through family social capital, distinguished the value youth placed on academic achievement but did not improve grades or decrease the likelihood that they would drop out of high school.

Nevertheless, the research touted several advantages for investigating the problem. The studies used multiple methods (observations, surveys, and GIS) and sources of data (census, geocoded addresses, youth, parents, and archival) to draw inferences. In this way, understanding of context grew in complexity. In addition, Study Two used longitudinal data to identify trajectories of family social capital among high-risk youth. While the medical field has for decades applied longitudinal data analysis to research morbidity and mortality (Fitzmaurice et al., 2004), the time has come to apply longitudinal data from sociological or urbanization processes for understanding health and education outcomes.

The research could no doubt benefit from additional methodological approaches. Foremost, qualitative reports can elucidate how youth, parents, and residents process features of

their neighborhood and social environments, as identified in Study One (neighborhood institutional resources, and observed structural qualities) and Study Two (school staff, participants of religious services, and family members). This type of mixed-methods approach, though criticized by some for marginalizing qualitative data to a secondary, supportive role (Denzin, Lincoln, & Giardina, 2006), enriches research with a "multi-dimensional" (p. 10) characterization of experience (Mason, 2006). Secondly, longitudinal data on neighborhood characteristics, beyond decennial census data, are needed to understand how neighborhoods change and affect residents over time. Similarly, data tracking residents by moves and neighborhood features add continuity to contextual data sets.

In conclusion, the reader might question what neighborhoods have to do with dropout, and, moreover, with health. The present research should be understood within a public health framework that encompasses educational outcomes as a determinant of health. This process is happening on multiple fronts worldwide, leaving a broad array of indicators, including neighborhood qualities and processes, to explain social inequalities (de Looper & Lafortune, 2009; Hoornweg, Freire, Nunez, & Palugyai, 2008; Lavin & Metcalfe, 2008). Alternatively, scientists have focused on dimensions, such as political ideologies (Szreter, 2002; Szreter & Woolcock, 2004), power relations (Navarro, 2009), and cultural differences based on geographies (Diamond, 2005), to explain how inequalities translate into poorer health outcomes. Or, the picture might be simpler. By way of a "cliff analogy," some researchers have visualized health disparities as an individual's lack of a safety fence, safety net, or presence of an ambulance at the foot of the precipice to stymie further injury from a fall (Jones, Jones, Perry, Barclay, & Jones, 2009). Understanding problems — whether dropout or injury — from

multiple perspectives opens the door to developing multiple strategies to bolster healthy youth development.

REFERENCES

Adler, N. E., & Newman, K. (2002). Socioeconomic disparities In health: Pathways and policies. *Health Aff, 21*(2), 60-76. doi: 10.1377/hlthaff.21.2.60

Aisenberg, E., & Herrenkohl, T. (2008). Community violence in context: Risk and resilience in children and families. *Journal of Interpersonal Violence, 23*(3), 296-315.

Ajibade, P. B. (2009). Supersizing of tobacco advertising targeting youth: A pilot study of convenience stores in Virginia. *Virginia Journal, 30*(2), 15-19.

Amato, P. R., & Cheadle, J. (2005). The long reach of divorce: Divorce and child well-being across three generations. *Journal of Marriage & Family, 67*(1), 191-206. doi: 10.1111/j.0022-2445.2005.00014.x

Andresen, E. M., Malmstrom, T. K., Miller, D. K., & Wolinsky, F. D. (2006). Reliability and validity of observer ratings of neighborhoods. *Journal of Aging and Health, 18*(1), 28-36. doi: 10.1177/0898264305281001

Andruff, H., Carraro, N., Thompson, A., Gaudreau, P., & Louvet, B. (2009). Latent class growth modelling: A tutorial (Vol. 5, pp. 11-24).

Anscombe, F. J., & Tukey, J. W. (1963). The examination and analysis of residuals. *Technometrics, 5*(2), 141-160.

Araya, R., Dunstan, F., Playle, R., Thomas, H., Palmer, S., & Lewis, G. (2006). Perceptions of social capital and the built environment and mental health. *Social Science & Medicine, 62*(12), 3072-3083.

Bandura, A. (1977). Self-efficacy: Toward a unifying theory of behavioral change. *Psychological Review, 84*(2), 191-215.

Bandura, A. (2004). Health promotion by social cognitive means. *Health Educ Behav, 31*(2), 143-164. doi: 10.1177/1090198104263660

Banerjee, A., LaScala, E., Gruenewald, P. J., Freisthler, B., Treno, A., & Remer, L. G. (2008a). Social disorganization, alcohol, and drug markets and violence* *Geography and Drug Addiction* (pp. 117-130).

Banerjee, A., LaScala, E. A., Gruenewald, P. J., Freisthler, B., Treno, A., & Remer, L. (2008b). Social disorganization, alcohol and other drug markets, and violence: A space-time model of community structure *The geography of illegal drug markets B2 - The geography of illegal drug markets*: National Institute on Drug Abuse and American Association of Geographers Monograph.

Barrington, B. L., & Hendricks, B. (1989). Differentiating characteristics of high school graduates, dropouts, and nongraduates. *Journal of Educational Research, 82*(6).

Bass, J. K., & Lambert, S. F. (2004). Urban adolescents' perceptions of their neighborhoods: An examination of spatial dependence. *Journal of Community Psychology, 32*(3), 277-293.

Battin-Pearson, S., Newcomb, M. D., Abbott, R. D., Hill, K. G., Catalano, R. F., & Hawkins, J. D. (2000). Predictors of early high school dropout: A test of five theories. *Journal of Educational Psychology, 92*(3), 568-582.

Bem, D. J. (1967). Self-perception: An alternative interpretation of cognitive dissonance phenomena. *Psychological Review, 74*(3), 183-200.

Ben-Hur, A., & Guyon, I. (2003). Detecting stable clusters using principal components analysis. In M. J. Brownstein & A. Kohodursky (Eds.), *In functional genomics: Methods and protocols* (pp. 159-182). Totowa, NJ: Humana Press.

Benson, P. L. (1997). *All kids are our kids : What communities must do to raise caring and responsible children and adolescents*. San Francisco: Jossey-Bass.

Birnbaum, A. S., Lytle, L. A., Hannan, P. J., Murray, D. M., Perry, C. L., & Forster, J. L. (2003a). School functioning and violent behavior among young adolescents: A contextual analysis. *Health Educ. Res., 18*(3), 389-403. doi: 10.1093/her/cyf036

Birnbaum, A. S., Lytle, L. A., Perry, C. L., Murray, D. M., & Story, M. (2003b). Developing a school functioning index for middle schools. *Journal of School Health, 73*(6), 232-238. doi: 10.1093/her/cyf036

Bowen, G. L., Rose, R. A., Powers, J. D., & Glennie, E. J. (2008). The joint effects of neighborhoods, schools, peers, and families on changes in the school success of middle school students. *Family Relations, 57*(4), 504-516.

Bowen, M. (1966). The use of family theory in clinical practice. *Comprehensive Psychiatry, 7*, 345-374.

Bowlby, J. (1988). *A secure base: Parent-child attachment and healthy human development*. New York: Basic Books.

Bridgeland, J. M., DiIulio, J. J., & Morison, K. B. (2006). The silent epidemic: Perspectives of high school dropouts. Washington, D.C.: Civic Enterprises, Peter D. Hart Associates.

Brody, G. H., Ge, X., Rand, C., Gibbons, F. X., Murry, V. M., Gerrard, M., & Simons, R. L. (2001). The influence of neighborhood disadvantage, collective socialization, and

parenting on African American children's affiliation with deviant peers. *Child Development, 72*(4), 1231-1246.

Bronfenbrenner, U. (1989). Ecological systems theory. *Annals of Child Development, 6*, 187-249.

Buu, A., DiPiazza, C., Wang, J., Puttler, L. I., Fitzgerald, H. E., & Zucker, R. A. (2009). Parent, family, and neighborhood effects on the development of child substance use and other psychopathology from preschool to the start of adulthood. *Journal of Studies on Alcohol and Drugs, 70*(4), 489-498.

Cairns, R. B., Cairns, B. D., & Neckerman, H. J. (1989). Early school dropout: Configurations and determinants. *Child Development, 60*(6), 1437-1452.

Campbell, C., Hahn, R., Elder, R., Brewer, R., Chattopadhyay, S., Fielding, J., . . . Middleton, J. C. (2009). The effectiveness of limiting alcohol outlet density as a means of reducing excessive alcohol consumption and alcohol-related harms. *American Journal of Preventive Medicine, 37*(6), 556-569.

Catalano, R. F., Berglund, M. L., Ryan, J., Lonczak, H., & Hawkins, J. D. (2004a). Positive youth development in the United States: Research findings on evaluations of positive youth development programs. *The Annals of the American Academy of Political and Social Science, 591*(1), 98-124.

Catalano, R. F., Haggerty, K. P., Oesterle, S., Fleming, C. B., & Hawkins, J. D. (2004b). The importance of bonding to school for healthy development: Findings from the Social Development Research Group. *The Journal Of School Health, 74*(7), 252-261.

Caughy, M. O., O'Campo, P. J., & Patterson, J. (2001). A brief observational measure for urban neighborhoods. *Health & Place, 7*(3), 225-236.

Christle, C. A., Jolivette, K., & Nelson, C. M. (2005). Breaking the School to Prison Pipeline: Identifying School Risk and Protective Factors for Youth Delinquency. *Exceptionality, 13*(2), 69-88.

Cleveland, M. J., Gibbons, F. X., Gerrard, M., Pomery, E. A., & Brody, G. H. (2005). The impact of parenting on risk cognitions and risk behavior: A study of mediation and moderation in a panel of African American adolescents. *Child Development, 76*(4), 900-916.

Cohen, D., Spear, S., Scribner, R., Kissinger, P., Mason, K., & Wildgen, J. (2000). `Broken windows' and the risk of gonorrhea. *American Journal of Public Health, 90*(2), 230-236.

Coleman, J. (1988). Social capital in the creation of human capital. *The American Journal of Sociology, 94*, S95-S120.

Coleman, M., Ganong, L., & Fine, M. (2000). Reinvestigating remarriage: Another decade of progress. *Journal of Marriage & Family, 62*(4), 1288-1307.

Coulton, C. J., Korbin, J., Chan, T., & Su, M. (2001). Mapping residents' perceptions of neighborhood boundaries: A methodological note. *American Journal Of Community Psychology, 29*(2), 371-383. doi: 10.1023/a:1010303419034

Crane, J. (1991). The epidemic theory of ghettos and neighborhood effects on dropping out and teenage childbearing. *The American Journal of Sociology, 96*(5), 1226-1259.

Creswell, J. W. (1998). *Qualitative inquiry and research design: Choosing among five traditions*. Thousand Oaks: Sage Publications, Inc.

Cromley, E. K., & McLafferty, S. (2002). *GIS and public health*. New York: The Guilford Press.

Croninger, R. G., & Lee, V. E. (2001). Social capital and dropping out of high school: Benefits to at-risk students of teachers' support and guidance. *Teachers College Record, 103*(4), 548-581. doi: doi:10.1111/0161-4681.00127

Crowder, K., & South, S. (2003). Neighborhood distress and school dropout: The variable significance of community context. *Social Science Research, 32*, 659-698.

Cutler, D. M., & Lleras-Muney, A. (2006). Education and health: Evaluating theories and evidence *NBER working paper*. Cambridge, MA: National Bureau of Economic Research.

Cutrona, C. E., Russell, D. W., Hessling, R. M., Brown, P. A., & Murry, V. (2000). Direct and moderating effects of community context on the psychological well-being of African American women. *Journal of Personality and Social Psychology, 79*(6), 1088-1101. doi: 10.1037/0022-3514.79.6.1088

Dalton, B., Glennie, E., & Ingels, S. J. (2009). Late high school dropouts: Characteristics, experiences, and changes across cohorts (NCES 2009-307). Washington, D.C.: National Center for Education Statistics, Institute of Education Sciences, U.S. Department of Education.

Daly, B., Shin, R., Thakral, C., Selders, M., & Vera, E. (2009). School engagement among urban adolescents of color: Does perception of social support and neighborhood safety really matter? *Journal of Youth and Adolescence, 38*(1), 63-74.

Dannenberg, A. L., Jackson, R. J., Frumkin, H., Schieber, R. A., Pratt, M., Kochtitzky, C., & Tilson, H. H. (2003). The impact of community design and land-use choices on public health: A scientific research agenda. *American Journal of Public Health, 93*(9), 1500-1508.

de Looper, M., & Lafortune, G. (2009). Measuring disparities in health status and in access and use of health care in OECD countries *Health Working Papers No. 43*: Organization for Economic Cooperation and Development.

Denzin, N. K., Lincoln, Y. S., & Giardina, M. D. (2006). Disciplining qualitative research. *International Journal of Qualitative Studies in Education, 19*(6), 769-782.

Diamond, J. M. (2005). *Guns, germs, and steel : The fates of human societies*. New York: Norton.

Dietz, R. D. (2002). The estimation of neighborhood effects in the social sciences: An interdisciplinary approach. *Social Science Research, 31*(4), 539-575.

Diez-Roux, A. V., Merkin, S. S., Arnett, D., Chambless, L., Massing, M., Nieto, F. J., . . . Watson, R. L. (2001). Neighborhood of residence and incidence of coronary heart disease. *N Engl J Med, 345*(2), 99-106. doi: 10.1056/nejm200107123450205

Dika, S. L., & Singh, K. (2002). Applications of social capital in educational literature: A critical synthesis. *Review of Educational Research, 72*(1), 31-60.

Dodge, K. A., & Crick, N. R. (1990). Social information-processing bases of aggressive behavior in children. *Pers Soc Psychol Bull, 16*(1), 8-22. doi: 10.1177/0146167290161002

Dodge, K. A., Laird, R., Lochman, J. E., & Zelli, A. (2002). Multidimensional latent-construct analysis of children's social information processing patterns: Correlations with aggressive behavior problems. *Psychological Assessment, 14*(1), 60-73.

Dominguez, S., & Arford, T. (2010). It is all about who you know: Social capital and health in low-income communities. *Health Sociology Review: The Journal of the Health Section of the Australian Sociological Association, 19*(1), 114.

Dorsey, S., & Forehand, R. (2003). The relation of social capital to child psychosocial adjustment difficulties: The role of positive parenting and neighborhood dangerousness. *Journal of Psychopathology and Behavioral Assessment, 25*(1), 11-23.

Dowd, K., Kinsey, S., Wheeless, S., Thissen, R. J., Mierzwa, F., Biemer, P., . . . Spicer, P. (2007). National Survey of Child and Adolescent Well-Being. *Adm Policy Ment Health & Ment Health Serv Res, 34*, 150-159.

Drukker, M., Kaplan, C., & van Os, J. (2005). Residential instability in socioeconomically deprived neighbourhoods, good or bad? *Health & Place, 11*(2), 121-129.

Duncan, G. J., & Raudenbush, S. (2001). Neighborhoods and adolescent development: How can we determine the links? In A. Booth & A. C. Crouter (Eds.), *Does It Take a Village?: Community Effects on Children, Adolescents, and Families* (pp. 31-40). Mahweh, New Jersey: Lawrence Erlbaum Associates, Inc.

Duncan, G. J., & Raudenbush, S. W. (1999). Assesing the effects of context in studies of child and youth development. *Educational Psychologist, 34*(1), 29.

Dweck, C. S., & Leggett, E. L. (1988). A social-cognitive approach to motivation and personality. *Psychological Review, 95*(2), 256-273.

Eccles, J. S., & Harold, R. D. (1993). Parent-school involvement during the early adolescent years. *Teachers College Record, 94*(3), 568-587.

Edelman, L. S. (2007). Using geographic information systems in injury research. *Journal Of Nursing Scholarship: An Official Publication Of Sigma Theta Tau International Honor Society Of Nursing / Sigma Theta Tau, 39*(4), 306-311.

Ehrenberg, R. G., & Brewer, D. J. (1994). Do school and teacher characteristics matter? Evidence from High School and Beyond. *Economics of Education Review, 13*(1), 1-17.

Elliott, E. S., & Dweck, C. S. (1988). Goals: An approach to motivation and achievement. *Journal of Personality and Social Psychology, 54*(1), 5-12. doi: 10.1037/0022-3514.54.1.5

Emory, R., Caughy, M., Harris, T. R., & Franzini, L. (2008). Neighborhood social processes and academic achievement in elementary school. *Journal of Community Psychology, 36*(7), 885-898.

Ensminger, M. E., Lamkin, R. P., & Jacobson, N. (1996). School leaving: A longitudinal perspective including neighborhood effects. *Child Development, 67*(5), 2400-2416.

Ensminger, M. E., & Slusarcick, A. L. (1992). Paths to high school graduation or dropout: A longitudinal study of a first-grade cohort. *Sociology of Education, 65*(2), 95-113.

Esbensen, F.-A., Peterson, D., Taylor, T. J., & Freng, A. (2009). Similarities and differences in risk factors for violent offending and gang membership. *Australian & New Zealand Journal of Criminology, 42*(3), 310-335. doi: 10.1375/acri.42.3.310

Evans, G. (2003). The built environment and mental health. *Journal of Urban Health, 80*(4), 536-555.

Fan, C. S. (2008). Religious participation and children's education: A social capital approach. *Journal of Economic Behavior and Organization, 65*(2), 303-317. doi: http://www.elsevier.com/wps/find/journaldescription.cws_home/505559/description#description

Farmer, T. W., Estell, D. B., Leung, M.-C., Trott, H., Bishop, J., & Cairns, B. D. (2003). Individual characteristics, early adolescent peer affiliations, and school dropout: An examination of aggressive and popular group types. *Journal of School Psychology, 41*(3), 217-232.

Farrington, D. P., & Loeber, R. (2000). Some benefits of dichotomization in psychiatric and criminological research. *Criminal Behaviour & Mental Health, 10*(2), 100.

Farrington, D. P., Loeber, R., Yin, Y., & Anderson, S. J. (2002). Are within-individual causes of delinquency the same as between-individual causes? *Criminal Behaviour And Mental Health: CBMH, 12*(1), 53-68.

Finn, J. D. (1989). Withdrawing from school. *Review of Educational Research, 59*(2), 117-142.

Fitzmaurice, G. M., Laird, N. M., & Ware, J. H. (2004). *Applied longitudinal analysis*. Hoboken, N.J.: Wiley-Interscience.

Fitzpatrick, K. M., & Yoels, W. C. (1992). Policy, school structure, and sociodemographic effects on statewide high school dropout rates. *Sociology of Education, 65*(1), 76-93.

Franzini, L., Caughy, M. O. B., Nettles, S. M., & O'Campo, P. (2008). Perceptions of disorder: Contributions of neighborhood characteristics to subjective perceptions of disorder. *Journal of Environmental Psychology, 28*(1), 83-93.

Freudenberg, N., & Ruglis, J. (2007). Reframing school dropout as a public health issue. *Preventing Chronic Disease, 4*(4), 1-11.

Furstenberg, F. F. (2005). Banking on families: How families generate and distribute social capital. *Journal of Marriage & Family, 67*(4), 809-821. doi: 10.1111/j.1741-3737.2005.00177.x

Galambos, N. L., Barker, E. T., & Almeida, D. M. (2003). Parents do matter: Trajectories of change in externalizing and internalizing problems in early adolescence. *Child Development, 74*(2), 578-594.

Galobardes, B., Shaw, M., Lawlor, D. A., Lynch, J. W., & Smith, G. D. (2006). Glossary: Indicators of socioeconomic position (part 1). *Journal of Epidemiology and Community Health (1979-), 60*(1), 7-12. doi: 10.11 36/ jech. 2004.02353 1

Gebauer, H., & Laska, M. (2011). Convenience stores surrounding urban schools: An assessment of healthy food availability, advertising, and product placement. *Journal of Urban Health, 88*(4), 616-622. doi: 10.1007/s11524-011-9576-3

Gerard, J. M., & Buehler, C. (2004). Cumulative environmental risk and youth maladjustment: The role of youth attributes. *Child Development, 75*(6), 1832-1849.

Ginther, D., Itaveman, R., & Wolfe, B. (2000). Neighborhood attributes as determinants of children's outcomes: How robust are the relationships? *Journal of Human Resources, 35*(4), 603-642.

Gordon-Larsen, P., Nelson, M. C., Page, P., & Popkin, B. M. (2006). Inequality in the built environment underlies key health disparities in physical activity and obesity. *Pediatrics, 117*(2), 417-424. doi: 10.1542/peds.2005-0058

Gorman-Smith, D., Tolan, P. H., Zelli, A., & Huesmann, L. R. (1996). The relation of family functioning to violence among inner-city minority youths. *Journal of Family Psychology, 10*(2), 115-129. doi: 10.1037/0893-3200.10.2.115

Gorsuch, R. L. (1990). Common factor analysis versus component analysis: Some well and little known facts. *Multivariate Behavioral Research, 25*(1), 33.

Gottfredson, M., & Hirschi, T. (1990). *A general theory of crime*. Stanford, CA: Stanford University Press.

Grant, K. E., Compas, B. E., Stuhlmacher, A. F., Thurm, A. E., McMahon, S. D., & Halpert, J. A. (2003). Stressors and child and adolescent psychopathology: Moving from markers to mechanisms of risk. *Psychological Bulletin, 129*(3), 447-466.

Gruenewald, P., Freisthler, L. R., LaScala, E., Treno, A., & Ponicki, W. R. (2010). Ecological associations of alcohol outlets with underage and young adult injuries. *Alcoholism: Clinical and Experimental Research, 34*(3), 519-527.

Haney, W. G., & Knowles, E. S. (1978). Perception of neighborhoods by city and suburban residents. *Human Ecology, 6*(2), 201-214.

Harding, D. (2003). Counterfactual models of neighborhood effects: The effect of neighborhood poverty on dropping out and teenage pregnancy. *American Journal of Sociology, 109*(3), 676-719. doi: doi:10.1086/379217

Hardre, P. L., & Reeve, J. (2003). A motivational model of rural students' intentions to persist in, versus drop out of, high school. *Journal of Educational Psychology, 95*(2), 347-356.

Hart, D., & Marmorstein, N. R. (2009). Neighborhoods and genes and everything in between: Understanding adolescent aggression in social and biological contexts. *Development and Psychopathology, 21*(3), 961-973.

Hemphill, S., Toumbourou, J., Catalano, R. F., & Mathers, M. (2004). Levels and family correlates of positive adolescent development: A cross-national comparison. *Family Matters*(68), 28.

Henry, D. B., & Farrell, A. D. (2004). The study designed by a committee: Design of the Multisite Violence Prevention Project. *American Journal of Preventive Medicine, 26*(1 Suppl), 12-19.

Hoornweg, D., Freire, M., Nunez, F., & Palugyai, N. (2008). *Global City Indicators Program report: Part of a program to assist cities in developing an integrated apporach for measuring city performance*. Environmental Resources Management (ERM). Retrieved from http://www.cityindicators.org

Hunt, M. H., Meyers, J., Davies, G., Meyers, B., Grogg, K. R., & Neel, J. (2002). A comprehensive needs assessment to facilitate prevention of school drop out and violence. *Psychology in the Schools, 39*(4), 399.

Jackson, R. J. (2003). The impact of the built environment on health: An emerging field. *American Journal of Public Health, 93*(9), 1382-1383.

Jencks, C., & Mayer, S. (1990). The social consequences of growing up in a poor neighborhood. In L. E. Lynn & M. G. H. McGreary (Eds.), *Inner-city poverty in the United States* (pp. 111-186). Washington, D.C.: National Academy Press.

Jimerson, S., Egeland, B., Sroufe, L. A., & Carlson, B. (2000). A prospective longitudinal study of high school dropouts examining multiple predictors across development. *Journal of School Psychology, 38*(6), 525-549.

Jones, B. L., & Nagin, D. S. (2007). Advances in group-based trajectory modeling and an SAS procedure for estimating them. *Sociological Methods & Research, 35*(4), 542-571. doi: 10.1177/0049124106292364

Jones, B. L., Nagin, D. S., & Roeder, K. (2001). A SAS procedure based on mixture models for estimating developmental trajectories. *Sociological Methods & Research, 29*(3), 374-393.

Jones, C. P., Jones, C. Y., Perry, G. S., Barclay, G., & Jones, C. A. (2009). Addressing the social determinants of children's health: A cliff analogy. *Journal of Health Care for the Poor and Underserved, 20*(4), 1-1-12.

Kabacoff, R. I., Miller, I. W., Bishop, D. S., Epstein, N. B., & Keitner, G. I. (1990). A psychometric study of the McMaster Family Assessment Device in psychiatric, medical, and nonclinical samples. *Journal of Family Psychology, 3*(4), 431-439. doi: 10.1037/h0080547

Kawachi, I., & Berkman, L. (2003). Introduction. In I. Kawachi & L. Berkman (Eds.), *Neighborhoods and Health* (pp. 1-19). New York: Oxford University Press.

Kegler, M., Oman, R., Vesely, S., McLeroy, K., Aspy, C., Rodine, S., & al., e. (2005). Relationships among youth assets and neighborhood and community resources. *Health Education & Behavior, 32*(3), 380-397.

Kelley, H. H. (1980). Attribution theory and research. *Ann. Rev, Psychol., 31*, 457-501.

Kirby, D. (2002). Antecedents of adolescent initiation of sex, contraceptive use, and pregnancy. *American Journal Of Health Behavior, 26*(6), 473-485.

Kohen, D. E., Brooks-Gunn, J., Leventhal, T., & Hertzman, C. (2002). Neighborhood income and physical and social disorder in Canada: Associations with young children's competencies. *Child Development, 73*(6), 1844-1860.

Krieger, N., Chen, J. T., Waterman, P. D., Rehkopf, D. H., & Subramanian, S. V. (2005). Painting a truer picture of US socioeconomic and racial/ethnic health inequalities: The Public Health Disparities Geocoding Project. *American Journal of Public Health, 95*(2), 312-323.

Kruger, D., Reischl, T., & Gee, G. (2007). Neighborhood social conditions mediate the associations between physical deterioration and mental health. *Am J Commun Psychol, 40*, 261-271.

Kulis, S., Marsiglia, F. F., Sicotte, D., & Nieri, T. (2007). Neighborhood effects on youth substance use in a southwestern city. *Sociological Perspectives, 50*(2), 273-301.

Laird, R. D., Criss, M., Pettit, G., Dodge, K., & Bates, J. (2008). Parents' monitoring knowledge attenuates the link between antisocial friends and adolescent delinquent behavior. *Journal of Abnormal Child Psychology*, *36*(3), 299-310. doi: 10.1007/s10802-007-9178-4

Laird, R. D., Criss, M. M., Pettit, G. S., Bates, J. E., & Dodge, K. A. (2009). Developmental trajectories and antecedents of distal parental supervision. *The Journal of Early Adolescence*, *29*(2), 258-284. doi: 10.1177/0272431608320123

Lambert, D. (1992). Zero-inflated poisson regression, with an application to defects in manufacturing. *Technometrics, 34*(1), 1-14.

Lan, W., & Lanthier, R. (2003). Changes in students' academic performance and perceptions of school and self before dropping out of schools. *Journal of Education for Students Placed at Risk*, *8*(3), 309-332.

Larsen, K., & Merlo, J. (2005). Appropriate assessment of neighborhood effects on individual health: Integrating random and fixed effects in multilevel logistic regression. *American Journal of Epidemiology*, *161*(1), 81-88.

Larson, R. W. (2000). Toward a psychology of positive youth development. *American Psychologist*, *55*(1), 170-183.

Lavin, T., & Metcalfe, O. (2008). *Policies and actions addressing the socioeconomic determinants of health inequalities: Examples of activity in Europe*. Institute of Public Health in Ireland. Retrieved from http://www.health-inequalities.eu

Lee, V. E., & Burkam, D. T. (2003). Dropping out of high school: The role of school organization and structure. *American Educational Research Journal*, *40*(2), 353-393.

Leffert, N., Benson, P. L., Scales, P. C., Sharma, A. R., Drake, D. R., & Blyth, D. A. (1998). Developmental assets: Measurement and prediction of risk behaviors among adolescents. *Applied Developmental Science, 2*(4), 209.

Leventhal, T., & Brooks-Gunn, J. (2000). The neighborhoods they live in: The effects of neighborhood residence on child and adolescent outcomes. *Psychological Bulletin, 126*(2), 309-337.

Li, Q., Kirby, R. S., Sigler, R. T., Hwang, S.-S., Lagory, M. E., & Goldenberg, R. L. (2010). A multilevel analysis of individual, household, and neighborhood correlates of intimate partner violence among low-income pregnant women in Jefferson county, Alabama. *American Journal Of Public Health, 100*(3), 531-539.

Lipton, R., Gorman, D., Wieczorek, W., & Gruenewald, P. (2003). The application of spatial analysis to the public health understanding of alcohol and alcohol-related problems. In O. A. Khan (Ed.), *Geographic information systems and health applications* (pp. 57-79). Hershey: Idea Group Publishing.

Loeber, R., Farrington, D. P., Stouthamer Loeber, M., Van Kammen, W. B., Lahey, B. B., Gordon, R. A., & Stouthamer-Loeber, M. (1999). Pittsburgh Youth Study Supervision/Involvement Scale. *Journal of Abnormal Child Psychology, 27*, 261-276.

Low, M. D., Low, B. J., Baumler, E. R., & Huynh, P. T. (2005). Can education policy be health policy? Implications of research on the social determinants of health. *Journal of Health Politics, Policy & Law, 30*(6), 1131-1162.

Macinko, J., & Starfield, B. (2001). The utility of social capital in research on health determinants. *The Milbank Quarterly, 79*(3), 387-427.

Macintyre, S., Ellaway, A., & Cummins, S. (2002). Place effects on health: How can we conceptualise, operationalise and measure them? *Social Science & Medicine, 55*(1), 125-139.

Macintyre, S., Macdonald, L., & Ellaway, A. (2008). Do poorer people have poorer access to local resources and facilities? The distribution of local resources by area deprivation in Glasgow, Scotland. *Social Science & Medicine, 67*(6), 900-914. doi: 10.1016/j.socscimed.2008.05.029

Madyun, N. i., & Lee, M. (2010). Effects of religious involvement on parent-child communication regarding schooling: A study of black youth in the United States. *Journal of Negro Education, 79*(3), 295-307.

Maes, L., & Lievens, J. (2003). Can the school make a difference? A multilevel analysis of adolescent risk and health behaviour. *Social Science & Medicine, 56*(3), 517-529.

Manlove, J. (1998). The influence of high school dropout and school disengagement on the risk of school-age pregnancy. *Journal of Research on Adolescence (Lawrence Erlbaum), 8*(2), 187-220.

Manski, C. F. (2000). Economic analysis of social interactions. *Journal of Economic Perspectives, 14*(3), 115-136.

Mash, E. J., & Barkley, R. A. (Eds.). (2003). *Child psychopathology* (2nd ed.). New York: The Guilford Press.

Mason, J. (2006). Mixing methods in a qualitatively driven way. *Qualitative Research, 6*(1), 9-25.

McNeal Jr, R. B. (1999). Parental involvement as social capital: Differential effectiveness on science achievement, truancy, and dropping out. *Social Forces, 78*(1), 117-145.

Miller-Johnson, S., Sullivan, T. N., & Simon, T. R. (2004). Evaluating the impact of interventions in the Multisite Violence Prevention Study: Samples, procedures, and measures. *American Journal of Preventive Medicine, 26*(1, Supplement 1), 48-61.

Mollenkopf, J., & Champeny, A. (2009). The neighbourhood context for second-generation education and labour market outcomes in New York. *Journal of Ethnic & Migration Studies, 35*(7), 1181-1199. doi: 10.1080/13691830903006283

Morenoff, J. D., Sampson, R. J., & Raudenbush, S. W. (2001). Neighborhood inequality, collective efficacy, and the spatial dynamics of urban violence. *39*, 517-560.

Muller, C., & Ellison, C. G. (2001). Religious involvement, social capital, and adolescents' academic progress: Evidence from the national education longitudinal study of 1988. *Sociological Focus, 34*(2), 155-183.

Multisite Violence Prevention Project. (2004). The Multisite Violence Prevention Project: Background and overview. *American Journal of Preventive Medicine, 26*(1), 3-11.

Nagin, D. (2005). *Group-based modeling of development*. Cambridge, MA: Harvard University Press.

National Center for Injury Prevention and Control. (2009). CDC injury research agenda, 2009-2018, from http://www.cdc.gov/ncipc

Navarro, V. (2009). What we mean by social determinants of health. *International Journal of Health Services, 39*(3), 423-441.

Northridge, M., Sclar, E., & Biswas, P. (2003). Sorting out the connections between the built environment and health: A conceptual framework for navigating pathways and planning healthy cities. *Journal of Urban Health, 80*(4), 556-568.

O'Connor, A. (2001). *Poverty knowledge: Social science, social policy, and the poor in twentieth-century U.S. history*. Princeton, NJ: Princeton University Press.

Orpinas, P., Kelder, S., Frankowski, R., Murray, N., Zhang, Q., & McAlister, A. (2000). Outcome evaluation of a multi-component violence-prevention program for middle schools: The Students for Peace project. *Health Education Research, 15*(1), 45-58.

Orpinas, P., Murray, N., & Kelder, S. H. (1999). Parental influences on students' aggressive behavior and weapon-carrying. *Health Educ Behav, 26*(6), 774-787.

Parcel, T. L., & Dufur, M. J. (2001). Capital at home and at school: Effects on student achievement. [Article]. *Social Forces, 79*(3), 881-911.

Patton, D. U., & Johnson, D. W. (2010). Exposure to community violence and social capital: African American students in the critical transition to high school. *Harvard Journal of African American Public Policy, 16*, 53-72.

Pearce, J., Witten, K., Hiscock, R., & Blakely, T. (2007). Are socially disadvantaged neighbourhoods deprived of health-related community resources? *Int. J. Epidemiol., 36*(2), 348-355. doi: 10.1093/ije/dyl267

Peek-Asa, C., & Zwerling, C. (2003). Role of environmental interventions in injury control and prevention. *Epidemiologic Reviews, 25*, 77-89.

Perreira, K. M., Harris, K. M., & Dohoon, L. (2006). Making it in America: High school completion by immigrant and native youth. *Demography, 43*(3), 511-536.

Peterson, R. D., Krivo, L., & Harris, M. A. (2000). Disadvantage and neighborhood violent crime: Do local institutions matter? *Journal of Research in Crime and Delinquency, 37*(1), 31-63.

Pickett, K. E., & Pearl, M. (2001). Multilevel analyses of neighbourhood socioeconomic context and health outcomes: A critical review. *J Epidemiol Community Health, 55*(2), 111-122. doi: 10.1136/jech.55.2.111

Pong, S. L., & Ju, D. B. (2000). The effects of change in family structure and income on dropping out of middle and high school. *Journal of Family Issues, 21*(2), 147-169.

Porfeli, E., Wang, C., Audette, R., McColl, A., & Algozzine, B. (2009). Influence of social and community capital on student achievement in a large urban school district. *Education and Urban Society, 42*(1), 72-95.

Portes, A. (1998). Social capital: Its origins and applications in modern sociology. *Annual Review of Sociology, 24*(1), 1-24.

Portes, A. (2000). The hidden abode: Sociology as analysis of the unexpected. [Article]. *American Sociological Review, 65*(1), 1-18.

Putnam, R. D. (2000). *Bowling alone: The collapse and revival of American community*. New York: Simon & Schuster Paperbacks.

Putnam, R. D. (2004). Commentary: 'Health by association': Some comments. *Int. J. Epidemiol., 33*(4), 667-671. doi: 10.1093/ije/dyh204

Raudenbush, S. W., & Sampson, R. J. (1999). Ecometrics: Toward a science of assessing ecological settings, with application to the systematic social observation of neighborhoods. *Sociological Methodology, 29*, 1-41.

Ream, R. K., & Rumberger, R. W. (2008). Student engagement, peer social capital, and school dropout among Mexican American and Non-Latino White students. *Sociology of Education, 81*, 109-139.

Ricketts, T. C. (2003). Geographic Information Systems and public health. *Annual Review of Public Health, 24*(1), 1.

Robinson, W. (1950). Ecological correlations and the behavior of individuals. *American Sociological Review, 15*(3), 351-357.

Ross, C. E., & Wu, C.-l. (1995). The links between education and health. *American Sociological Review, 60*(5), 719-745.

Rumberger, R. W. (1987). High school dropouts: A review of issues and evidence. *Review of Educational Research, 57*(2), 101-121.

Rumberger, R. W. (1995). Dropping out of middle school: A multilevel analysis of students and schools. *American Educational Research Journal, 32*(3), 583-625.

Rumberger, R. W., & Lamb, S. P. (2003). The early employment and further education experiences of high school dropouts: A comparative study of the United States and Australia. *Economics of Education Review, 22*(4), 353-366.

Ryan, R. M., & Deci, E. L. (2000). Self-determination theory and the facilitation of intrinsic motivation, social development, and well-being. *American Psychologist, 55*(1), 68-78.

Sampson, R. J. (2001). How do communities undergird or undermine human development?: Relevant contexts and social mechanisms. In A. Booth & A. C. Crouter (Eds.), *Does it take a village?: Community effects on children, adolescents, and families* (pp. 3-30). Mahweh, New Jersey: Lawrence Erlbaum Associates, Inc.

Sampson, R. J., Morenoff, J., & Gannon-Rowley, T. (2002). Assessing "neighborhood effect": Social processes and new directions in research. *Annual Review Sociology, 28*, 443-478.

Sampson, R. J., Morenoff, J. D., & Earls, F. (1999). Beyond social capital: Spatial dynamics of collective efficacy for children. *American Sociological Review, 64*(5), 633-660.

Sampson, R. J., & Raudenbush, S. (1999). Systematic social observation of public spaces: A new look at disorder in urban neighborhoods. *The American Journal of Sociology, 105*(3), 603-651.

Sampson, R. J., & Raudenbush, S. W. (2004). Seeing disorder: Neighborhood stigma and the social construction of "broken windows". *Social Psychology Quarterly, 67*(4), 319-342.

Sampson, R. J., Raudenbush, S. W., & Earls, F. (1997). Neighborhoods and violent crime: A multilevel study of collective efficacy. *Science, 277*(5328), 918-924.

Schaefer-McDaniel, N., Caughy, M., O'Campo, P., & Gearey, W. (2010). Examining methodological details of neighbourhood observations and the relationship to health: A literature review. *Social Science & Medicine, 70*(2), 277-292.

Schaeffer, C. M., Petras, H., Ialongo, N., Poduska, J., & Kellam, S. (2003). Modeling growth in boys' aggressive behavior across elementary school: Links to later criminal involvement, conduct disorder, and antisocial personality disorder. *Developmental Psychology, 39*(6), 1020-1035.

Schulz, A., & Northridge, M. (2004). Social determinants of health: Implications for environmental health promotion. *Health Education & Behavior, 31*(4), 455-471.

Sharma, S. (1996). *Applied multivariate techniques*. New York: John Wiley & Sons, Inc.

Shlay, A. B., & Whitman, G. (2006). Research for democracy: Linking community organizing and research to leverage blight policy. *City & Community, 5*(2), 153-171. doi: 10.1111/j.1540-6040.2006.00167.x

Shriner, M., Mullis, R. L., & Schlee, B. M. (2009). The usefulness of social capital theory for understanding the academic improvement of young children in stepfamilies over two

points in time. *Journal of Divorce & Remarriage, 50*(7), 445-458. doi: 10.1080/10502550902970553

Simon, T. R., Ikeda, R. M., Smith, E. P., Reese, L. E., Rabiner, D. L., Miller-Johnson, S., . . . Allison, K. W. (2008). The Multisite Violence Prevention Project: Impact of a universal school-based violence prevention program on social-cognitive outcomes. *Prevention Science, 9*(4), 231-244. doi: DOI 10.1007/s11121-008-0101-1

Simons, R. L., Leslie Gordon, S., Burt, C. H., Drummund, H., Stewart, E., Brody, G. H., . . . Cutrona, C. (2006). Supportive parenting moderates the effect of discrimination upon anger, hostile view of relationships, and violence among African American boys. *Journal of Health and Social Behavior, 47*(4), 373-389.

Singer, J. D. (1998). Using SAS PROC MIXED to fit multilevel models, hierarchical models, and individual growth models. *Journal of Educational and Behavioral Statistics, 23*(4), 323-355.

Smith, E. P., Connell, C. M., Wright, G., Sizer, M., Norman, J. M., Hurley, A., & Walker, S. N. (1997). An ecological model of home, school, and community partnerships: Implications for research and practice. *Journal of Educational & Psychological Consultation, 8*(4), 339.

South, S. J., Crowder, K. D., & Trent, K. (1998). Children's residential mobility and neighborhood environment following parental divorce and remarriage. *Social Forces, 77*(2), 667-693.

Spencer, M. B. (2001). Resiliency and fragility factors associated with the contextual experiences of low resource urban African American male youth and families. In A. Booth & A. C. Crouter (Eds.), *Does it take a village?: Community effects on children,*

adolescents, and families (pp. 31-40). Mahweh, New Jersey: Lawrence Erlbaum Associates, Inc.

Srinivasan, S., O'Fallon, L. R., & Dearry, A. (2003). Creating healthy communities, healthy homes, healthy people: Initiating a research agenda on the built environment and public health. *American Journal of Public Health, 93*(9), 1446-1450.

Stouthamer-Loeber, M., Loeber, R., Wei, E., Farrington, D. P., & Wikstrom, P.-O. H. (2002). Risk and promotive effects in the explanation of persistent serious delinquency in boys. *Journal of Consulting and Clinical Psychology, 70*(1), 111-123.

Strohschein, L., Roos, N., & Brownell, M. (2009). Family structure histories and high school completion: Evidence from a population-based registry. *Canadian Journal of Sociology, 34*(1), 83-103.

Subramanian, S. V., Lochner, K. A., & Kawachi, I. (2003). Neighborhood differences in social capital: A compositional artifact or a contextual construct? *Health & Place, 9*(1), 33-44.

Sun, Y., & Li, Y. (2011). Effects of family structure type and stability on children's academic performance trajectories. *Journal of Marriage and Family, 73*(3), 541-556. doi: 10.1111/j.1741-3737.2011.00825.x

Szreter, S. (2002). Rethinking McKeown: The relationship between public health and social change. *American Journal of Public Health, 92*(5), 722-725.

Szreter, S., & Woolcock, M. (2004). Health by association? Social capital, social theory, and the political economy of public health. *Int. J. Epidemiol., 33*(4), 650-667. doi: 10.1093/ije/dyh013

Theall, K. P., Scribner, R., Cohen, D., Bluthenthal, R. N., Schonlau, M., & Farley, T. A. (2009). Social capital and the neighborhood alcohol environment. *Health & Place, 15*(1), 323-332. doi: 10.1016/j.healthplace.2008.06.001

Thomas, D. R. (2006). A general inductive approach for analyzing qualitative evaluation data. *American Journal of Evaluation, 27*(2), 237-246. doi: 10.1177/1098214005283748

Thornberry, T. P., Moore, M., & Christenson, R. L. (1985). The effect of dropping out of high school on subsequent criminal behavior. *Criminology, 23*(1), 3-18.

Tobler, A. L., Komro, K. A., & Maldonado-Molina, M. M. (2009). Relationship between neighborhood context, family management practices and alcohol use among urban, multi-ethnic, young adolescents. *Prevention Science: The Official Journal Of The Society For Prevention Research, 10*(4), 313-324.

Vallerand, R. J., Fortier, M. S., & Guay, F. d. r. (1997). Self-determination and persistence in a real-life setting: Toward a motivational model of high school dropout. *Journal of Personality and Social Psychology, 72*(5), 1161-1176.

Vartanian, T. P., & Gleason, P. M. (1999). Do neighborhood conditions affect high school dropout and college graduation rates? *Journal of Socio-Economics, 28*(1), 21-41.

Velicer, W., & Jackson, D. (1990). Component analysis versus common factor analysis: Some issues in selecting an appropriate procedure. *Multivariate Behavioral Research, 25*(1), 1-28.

Vitaro, F., Larocque, D., Janosz, M., & Tremblay, R. E. (2001). Negative social experiences and dropping out of school. *Educational Psychology, 21*(4), 401-415.

Vyas, S., & Kumaranayake, L. (2006). Constructing socio-economic status indices: How to use principal components analysis. *Health Policy and Planning, 21*(6), 459-468. doi: 10.1093/heapol/czl029

Weich, S., Blanchard, M., Prince, M., Burton, E., Erens, B. O. B., & Sproston, K. (2002). Mental health and the built environment: Cross-sectional survey of individual and contextual risk factors for depression. *The British Journal of Psychiatry, 180*(5), 428-433. doi: 10.1192/bjp.180.5.428

WHO. (2008). Closing the gap in a generation: Health equity through action on the social determinants of health. Geneva: Commission on Social Determinants of Health.

Widaman, K. (1993). Common factor analysis versus principal component analysis: Differential bias in representing model parameters? *Multivariate Behavioral Research, 28*(3), 263-311.

Wieczorek, W. F., & Hanson, C. E. (1997). New modeling methods: Geographic information systems and spatial analysis. *Alcohol Health And Research World, 21*(4), 331-339.

Wigfield, A., & Cambria, J. (2010). Students' achievement values, goal orientations, and interest: Definitions, development, and relations to achievement outcomes. *Developmental Review, 30*(1), 1-35.

Wilson, W. J. (1987). *The truly disadvantaged: The inner city, the underclass, and public policy*. Chicago, IL: University of Chicago Press.

Wood, L., & Giles-Corti, B. (2008). Is there a place for social capital in the psychology of health and place? *Journal of Environmental Psychology, 28*(2), 154-163.

Wu, Q., Palinkas, L. A., & He, X. (2010). An ecological examination of social capital effects on the academic achievement of Chinese migrant children. *British Journal of Social Work, 40*(8), 2578-2597. doi: 10.1093/bjsw/bcq051

Zenk, S. N., Schulz, A. J., House, J. S., Benjamin, A., & Kannan, S. (2005a). Application of community-based participatory research in the design of an observational tool In B. Israel, E. Eng, A. Schulz & E. Parker (Eds.), *Methods in community-based participatory research for health* (pp. 167-187). San Francisco: Jossey-Bass.

Zenk, S. N., Schulz, A. J., House, J. S., Benjamin, A., & Kannan, S. (2005b). Healthy Environments Partnership: Neighborhood Observational Checklist. In B. Israel, E. Eng, A. Schulz & E. Parker (Eds.), *Methods in Community-Based Participatory Research for Health* (pp. 408-422). San Francisco: Jossey-Bass.

Zenk, S. N., Schulz, A. J., Mentz, G., House, J. S., Gravlee, C. C., Miranda, P. Y., . . . Kannan, S. (2007). Inter-rater and test-retest reliability: Methods and results for the neighborhood observational checklist. *Health & Place, 13*(2), 452-465.

APPENDIX

A. NEIGHBORHOOD OBSERVATIONAL CHECKLIST

1. What is the Neighborhood ID#?

2. What experiences have you had previously on this block?

3. Notes: Note any special situations or circumstances that may have affected how you filled out this form (e.g., unusual weather, trash day, etc.).

4. Based on street-level frontage, how is the land used on the block face? (Mark all that apply)
   - ☐ Residential
   - ☐ Commercial/business
   - ☐ Industrial
   - ☐ Institutional
   - ☐ Parking lot
   - ☐ Vacant lot/open field

5. What type of residential housing occupies the most space on the block face?
   - ☐ Public housing
   - ☐ Apartments
   - ☐ Single family housing
   - ☐ Mobile homes
   - ☐ Non-residential

6. Mark condition of vacant lots or open spaces, if applicable (Mark all that apply)
   - ☐ In good condition
   - ☐ In poor condition
   - ☐ Used for gardening
   - ☐ Set up with furniture Lot
   - ☐ Other (specify):

7. Are there any sidewalks?
   - ☐ Yes
   - ☐ No

8. How would you rate the condition of the sidewalks (for walking)?
   - ☐ Good
   - ☐ Fair
   - ☐ Poor

- ☐ Under construction
- ☐ No sidewalk

9. Which of the following do you see on the Block Face? (Mark all that apply)
   - ☐ Undriveable/broken-down car
   - ☐ Empty beer cans/alcohol packaging
   - ☐ Cigarette butts/discarded tobacco packaging
   - ☐ None of the above

10. On the ground, is there garbage, litter, broken glass, clothes, etc.?
   - ☐ Heavy
   - ☐ Moderate
   - ☐ Light
   - ☐ None

11. Are there needles, syringes, condoms, or drug-related paraphernalia on the street or sidewalk, in yards/lots?
   - ☐ A lot
   - ☐ Some
   - ☐ Little
   - ☐ None

12. Does the street allow through traffic?
   - ☐ Yes
   - ☐ No

13. To what extent are there trees along the block face?
   - ☐ On 100%
   - ☐ On over 50%
   - ☐ On less than 50%
   - ☐ On none

14. Is there graffiti on buildings, sidewalks, walls, or signs?
   - ☐ Yes
   - ☐ No

15. Which of the following sayings/symbols are visible?(Mark all that apply)
   - ☐ Latino identity
   - ☐ African-American identity
   - ☐ Religious
   - ☐ Psychic
   - ☐ Southern
   - ☐ None
   - ☐ Other (specify):

16. Is there public transportation (e.g., a bus stop) on this block?
    - ☐ Yes
    - ☐ No

17. What advertisements are visible on the block?
    - ☐ Tobacco ad
    - ☐ Alcohol ad
    - ☐ None
    - ☐ Other (specify):

18. What neighborhood signs are visible? (Mark all that apply).
    - ☐ Neighborhood/crime watch
    - ☐ Security warning
    - ☐ Beware of dog
    - ☐ No trespassing/Keep out
    - ☐ Home For Sale
    - ☐ Home For Rent
    - ☐ Land for Sale
    - ☐ None
    - ☐ Other (specify):

19. How would you rate the condition of the BEST house on the block face?
    - ☐ Excellent
    - ☐ Good
    - ☐ Fair
    - ☐ Poor
    - ☐ Abandoned
    - ☐ Not applicable

20. How would you rate the condition of the WORST house on the block face?
    - ☐ Excellent
    - ☐ Good
    - ☐ Fair
    - ☐ Poor
    - ☐ Abandoned
    - ☐ Not applicable

21. Are any of the houses being renovated/built?
    - ☐ Yes
    - ☐ No

22. In general, how would you rate the condition of the yards?
    - ☐ Good
    - ☐ Fair
    - ☐ Poor
    - ☐ No residential grounds

23. What percent of the homes have security bars/high fences/watchdogs?
- ☐ 100%
- ☐ Over 50%
- ☐ Less than 50%
- ☐ None

24. What is the volume of traffic?
- ☐ Heavy
- ☐ Moderate
- ☐ Light
- ☐ No traffic

25. Are there any semi-trucks?
- ☐ Yes
- ☐ No

26. How would you rate the condition of the street surface (for driving)?
- ☐ Good
- ☐ Fair
- ☐ Poor
- ☐ Under construction

27. How noisy is the street?
- ☐ Very quiet
- ☐ Fairly quiet
- ☐ Somewhat noisy
- ☐ Very noisy

28. Do you see any stray or loose dogs?
- ☐ Yes
- ☐ No

29. Are there any people outdoors?
- ☐ Yes
- ☐ No

30. Who do you see? (Mark all that apply)
- ☐ Adult (over 18)
- ☐ Teens (13-17)
- ☐ Pre-teens (6-12)
- ☐ Preschoolers (5 and under)
- ☐ Nobody

31. To what extent are there strong odors in the block face (urine stench, rotting garbage, etc.)?
- ☐ Quite a bit .
- ☐ Some

- ☐ Not at all

32. To what extent are there unpleasant levels of dirt/dust in the block face?
    - ☐ Quite a bit
    - ☐ Some
    - ☐ Not at all

33. Do you see any police officers/car during your observation?
    - ☐ Yes
    - ☐ No

34. What are your comments about the block face?