

Neighborhood Influences on Adolescent Development

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Social contexts, particularly beyond the family, exert increasing influence on development during the second decade of life (Booth & Crouter, 2001; Bronfenbrenner, 1979; Steinberg & Morris, 2001). The growing need for autonomy during the adolescent years implies that adolescents spend more time outside of the home, typically with peers. Neighborhoods are thought to be one of the primary contexts for adolescents' out-of-home time. They provide not only the physical space in which youth frequently operate but also the social space in which a wide array of interactions occur.

In the United States, attention to neighborhoods as a social context for adolescent development dates back at least to the nineteenth century. Demographic changes at that time, including increasing industrialization, urbanization, and immigration led to social concerns about youth growing up in urban centers. Progressive Era reforms, such as the formation of juvenile courts, are a reflection of this movement (Kamerman & Kahn, 2001). It was not until almost a century later, however, that social scientists attempted to document links between neighborhood residence and adolescents' development (Sampson & Morenoff, 1997; Sampson, Morenoff, & Gannon-Rowley, 2002).

The focus continued to remain on urban youth and their involvement in risky behaviors such as crime and delinquency (Park, 1916; Shaw & McKay, 1942). Like the early research, contemporary interest in neighborhoods as a context for adolescent development was also fueled by demographic circumstances (Hernandez, 1993; Massey & Denton, 1993; Wilson, 1987, 1996). The loss of industrial jobs in favor of service and technology jobs, coupled with rising concentrations of poverty and unemployment in urban centers served to reignite scientific and policy interest in urban youth and their problematic behaviors (e.g., Bursik, 1988; Kornhauser, 1978; Sampson, 1992; Sampson & Groves, 1989; see also Sampson & Morenoff, 1997, for a review). Contemporary research on adolescent development in neighborhood context, much of it emanating from developmental scientists, although interested in risky behavior, has taken a broader lens in terms of outcomes of interest and types of neighborhoods studied (Leventhal & Brooks-Gunn, 2000).

The goal of this chapter is to review methodological, empirical, and theoretical advances in studying neighborhood contexts and adolescent development. The first section summarizes approaches to studying neighborhood

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influences, focusing on measurement and study designs. The following section reviews current research findings on neighborhood socioeconomic effects on adolescent development by domain—achievement (education and employment), emotional and social well-being (mental health, crime, delinquency, and substance use), and sexual activity and childbearing. The third section considers a taxonomy we developed for addressing the potential pathways through which neighborhood effects might operate on these outcomes (i.e., indirect pathways). The proposed theoretical models include institutional resources (characteristics and range of community resources), norms and collective efficacy (community social structure, peers, and physical threats), and relationships and ties (parenting, home environment, and support networks). Processes most relevant to adolescents are highlighted. The fourth section highlights emerging trends in neighborhood research on adolescent development and unresolved issues in the field. Finally, future directions for research on neighborhood contexts and adolescence and policy implications are summarized.

METHODOLOGICAL ISSUES IN STUDYING ADOLESCENT DEVELOPMENT IN NEIGHBORHOOD CONTEXTS

This section presents a brief review of key methodological issues confronting the study of adolescent development in neighborhood contexts, including definitions of neighborhoods, identification and measurement of neighborhood dimensions, study designs, and selection problems. This overview is intended to provide a backdrop for the remaining sections in this chapter.

Neighborhood Definitions

An important question to consider when studying adolescent development in neighborhood contexts is, "What is a neighborhood?" Alternative strategies have been used to define the neighborhood unit of analysis. The most frequent approach is to employ data collected

from the U.S. Decennial Census compiled from the census forms completed on the first of April during the first year of every decade. A neighborhood is then typically defined as a census tract; tracts contain approximately 3,000 to 8,000 individuals and are identified with the advice of local communities working under Census Bureau guidelines to reflect prominent physical and social features that signify neighborhoods, such as major streets, railroads, ethnic divisions, and the like. Another common, but somewhat smaller unit is the block group (census tracts contain one to four block groups), which contains approximately 600 to 3,000 people. Some researchers have combined two to three adjacent or relatively homogenous tracts or block groups into neighborhood clusters (e.g., Brody et al., 2001; Sampson, Raudenbush, & Earls, 1997). The smallest neighborhood unit used is the street- or face-block, which includes the two sides of the street facing a person's home. In contrast, most studies do not specify neighborhood boundaries when participant reports of neighborhood conditions are gathered; however, residents' reports of neighborhood boundaries appear to approximate census tracts (or clusters of tracts; Coulton, Korbin, Chan, & Su, 2001; Sampson, 1997).

Neighborhood Dimensions

A critical distinction to make in defining neighborhood dimensions is between neighborhood structure and neighborhood processes. Neighborhood structure entails compositional or sociodemographic attributes, such as median income, employment rate, and racial composition. Neighborhood processes include aspects such as social organization and institutional resources. Although it is thought to be a function of neighborhood structure, neighborhood social organization describes the capacity of residents to work together toward common goals and values and to establish institutions that promote and enforce these goals by regulating behavior (especially that of youth; Sampson et al., 2002; Shaw & McKay, 1942).

Institutional resources involve the presence of services and organizations that promote health, well-being, and general social welfare.

Given the accessibility of census data, census-based measures of neighborhood structural characteristics are employed in a majority of studies (Jencks & Mayer, 1990; Leventhal & Brooks-Gunn, 2000). Neighborhood income or socioeconomic status (SES)—a combination of social and economic indicators—is the most commonly studied structural dimension. Researchers often separate measures of neighborhood SES into high-SES/affluence (e.g., indexing percent high-income residents, percent professionals, and percent college-educated) and low SES/poverty (e.g., assessing percent poor, percent female-headed households, percent on public assistance, and percent unemployed). This distinction is made because the presence of poor and affluent neighbors may have differential associations with adolescent outcomes (Brooks-Gunn, Duncan, Klebanov, & Sealander, 1993; Jencks & Mayer, 1990). Other structural characteristics frequently considered are racial and ethnic diversity (e.g., percent Black, percent Latino, and percent foreign-born) and residential instability (e.g., percent moved in last 5 years, percent households in current home less than 10 years, and percent homeowners; Brooks-Gunn, Duncan, & Aber, 1997; Sampson et al., 1997). Despite general consistency across studies, specific definitions of these structural dimensions differ somewhat.

Neighborhood social organizational features commonly examined include informal social control, which depicts the degree to which residents monitor the behavior of others in accordance with socially accepted practices; and social cohesion, which refers to the extent of social connections within the neighborhood (measures of informal control and cohesion have been combined to assess what has been called, "collective efficacy"; Elliot et al., 1996; Sampson et al., 1997). Other organizational features that may result from the content and consensus of values include physical and

social disorder, which describes physical conditions (e.g., abandoned housing and graffiti) and social interactions (e.g., public drinking and prostitution) in the neighborhood (Ross & Jang, 2000; Sampson & Raudenbush, 1999). Institutional resources include the quantity and quality of services, schools, health care facilities, and recreational programs. The census does not directly evaluate neighborhood organization or resources, which are necessary for testing theoretical models (as we subsequently describe). Thus, much research has relied upon individual parents' or youth's ratings to capture neighborhood processes; these ratings are problematic for several reasons. First, they are often confounded with outcome measures also obtained by means of participant ratings, leading to problems of shared method variance. Second, the reliability of such measures may be questionable because in most cases it relies on individual rather than ecological data and corresponding methods for handling data. Raudenbush and Sampson (1999) lay out a compelling argument for "ecometric" standards of gathering data from multiple reporters (preferably independent of study families) to enhance reliability of neighborhood measures and to use appropriate statistical tools to generate neighborhood-level reliability indices.

Alternative methodologies are required to measure the neighborhood processes described, including systematic social observations, community surveys, neighborhood expert surveys, and administrative data. Systematic social observations or windshield surveys involve trained observers using a structured format to characterize neighborhoods through videotaping, rater checklists, or audiotaping (Barnes McGuire, 1997; Kohen, Brooks-Gunn, Leventhal, & Hertzman, 2002; Raudenbush & Sampson, 1999; Sampson & Raudenbush, 2004; Spencer, McDermott, Burton, & Kochman, 1997; Taylor, Gottfredson, & Brower, 1984). Community surveys entail interviewing nonparticipants in the study about their neighborhoods, yielding measures of neighborhoods that are independent from those obtained by study

participants (Sampson, 1997; Sampson et al., 1997). Moreover, as noted, interviewing multiple residents per neighborhood increases the reliability in neighborhood measurement. Neighborhood expert surveys require interviewing key community leaders such as prominent religious, political, business, and social leaders in the community about their neighborhoods (Sampson & Raudenbush, 2004). Finally, alternative administrative data sources are available from city, state, and federal agencies and include vital statistics from health departments, crime reports from police departments, school records from education departments, and child abuse and neglect records from human and social service agencies (Coulton & Korbin, 2007).

Study Designs

Researchers interested in understanding neighborhood effects on adolescent development have used nonexperimental and experimental approaches; each is reviewed in turn.

Nonexperimental Approaches

The earliest set of neighborhood studies used census-based measures of neighborhood structural characteristics in conjunction with data collected on youth and their families to examine associations among neighborhood residence and adolescent outcomes. This early nonexperimental research was based on two general classes of studies. The first set was large national data set, such as the Panel Study of Income Dynamics (PSID; Hill, 1991) and the National Longitudinal Survey of Youth-Child Supplement (NLSY-CS; Baker & Mott, 1989). These studies typically had large variation in neighborhood (and family) types and permitted estimation of neighborhood effects based on few adolescents per neighborhood. The second set was samples of youth drawn from single-city or regional samples in which the range of sampled neighborhoods as well as neighborhood types varied across studies. These city and regional samples were often comprised of primarily urban, low-income

neighborhoods. Well-known examples of these types of studies include the Pittsburgh Youth Study (Loeber & Wikström, 1993), the Beginning School Study in Baltimore (Entwisle, Alexander, & Olson, 1994), and the Chicago Youth Development Study (Gorman-Smith, Tolan, Zelli, & Huesmann, 1996).

Many of the earlier nonexperimental studies with appended census data were cross-sectional and were primarily useful for documenting associations between neighborhood residence and adolescent outcomes; however, they did not yield much information about the dynamic relationship between adolescents over the course of development and the neighborhoods in which they live, which may change over time through a variety of internal or external means. The next phase of neighborhood research, which incorporated neighborhoods into the study design, took on this challenge. In these neighborhood-based studies, a wide range of neighborhood types may be examined (e.g., neighborhoods from a variety of socio-demographic make-ups), or specific types of neighborhoods may be sampled (e.g., low- and moderate-poverty neighborhoods). Sampling is also conducted to ensure an adequate number of adolescents per neighborhood (e.g., at least 15–30 study participants per neighborhood; Duncan & Raudenbush, 1999) to conduct multi-level, longitudinal analyses. Multilevel analyses provide estimates of variation in outcomes both within and between neighborhoods, yielding more reliable estimates of neighborhood effects on adolescent outcomes. One well-known example of a neighborhood-based study is the Project on Human Development in Chicago Neighborhoods (PHDCN) in which census data were used to define two stratification variables—SES (three levels) and racial-ethnic composition (seven levels)—that were cross-classified, and then a stratified probability sample of 80 neighborhood clusters was selected for the longitudinal component of the study (Leventhal & Brooks-Gunn, 2003c). Finally, children and youth falling within seven age cohorts spanning from birth through

18 years of age were sampled from these 80 neighborhoods; approximately 75 children per neighborhood cluster were interviewed. In addition, PHDCN included an independent community survey component, in which neighborhood residents were interviewed regarding the social processes at play within their neighborhoods, as well as systematic social observations.

Experimental Approaches

Experimental and quasi-experimental studies that randomly assign families to live in certain types of neighborhoods have been conducted in the context of housing programs for low-income families. Because programs cannot serve all eligible or interested families, selection of neighborhoods is often random, based on housing availability (i.e., quasi-random), or both. In these studies, a subset of families is typically provided assistance in relocating from public housing located in high-poverty areas to less poor neighborhoods (e.g., families may receive vouchers to rent housing in private market or be offered public housing built in nonpoor neighborhoods).

The oldest quasi-experimental study is the Gautreaux Program, enacted following a 1976 court order to desegregate Chicago's public housing. Families were given vouchers to move, and assignment was based on housing availability (Rubinowitz & Rosenbaum, 2000). The most well known experimental study, the Moving to Opportunity for Fair Housing (MTO) demonstration program, was launched by the U.S. Department of Housing and Urban Development in 1994 partially in response to positive findings reported in the Gautreaux Program. Approximately 4,600 families across five cities were randomly assigned vouchers to move out of public housing in high-poverty neighborhoods into private housing of their choice or into private housing in low-poverty neighborhoods (with special assistance): by design, a subset of families remained in public housing (Goering & Feins, 2003).

Another type of experimental study that is relatively new is the use of natural experiments

in which some exogenous or external shift occurs that affects residents over time or differentially impacts neighborhoods (Fauth & Brooks-Gunn, 2008). Although few of these studies focus on neighborhoods per se, several have examined the impact of changes in environmental regulations on children's health at either the county or zip code level (Chay & Greenstone, 2003; Currie & Neidell, 2005). For example, Chay and Greenstone (2003) demonstrated how declines in county pollution levels were associated with declines in infant mortality. To our knowledge, this approach has not been employed in studies of adolescents, but provides a promising avenue for future research to explore.

Selection

Selection or omitted variable bias is the major criticism of nonexperimental designs used to study "neighborhood effects" and represents a potential threat to the validity of most existing neighborhood studies. Selection refers to the fact that families have some choice as to the neighborhoods in which they live, and some omitted (or unmeasured) variable associated with choice of neighborhood residence might account for any observed neighborhood effects (Duncan, Connell, & Klebanov, 1997; Manski, 1993; Tienda, 1991). A common strategy used to minimize selection as a problem is to account for child (e.g., sex and age) and family (e.g., income, parent education, family structure) demographic characteristics in analytic models. Although this approach is preferable (and, in our opinion, essential) because neighborhood characteristics are defined by family composition, it does not fully overcome the problem of selection. Moreover, many hypothesized omitted variables such as parental depression or motivation are not included in most studies, nor is the direction of bias resulting from the omission of these variables clear. For example, adolescents' parents who have poor mental health may be more likely to stay in disadvantaged neighborhoods than are parents with superior health. Conversely,

more organized parents may be more likely to stay in disadvantaged neighborhoods to conserve funds for recreational activities for their adolescents than are less organized parents. Despite potential selection problems due to unobserved variables, a recent study examining the factors influencing neighborhood selection among PHDCN families found that omitted variables hypothesized to represent potential threats of selection bias in neighborhood studies, such as those mentioned, had little impact on neighborhood selection over time (Sampson & Sharkey, 2008). Rather, family socioeconomic characteristics routinely controlled for in neighborhood studies, including race/ethnicity, income and education, were the most potent factors associated with residential stratification. Thus, controlling for these key family characteristics, as suggested earlier, might be sufficient for achieving reasonable estimates of neighborhood effects.

Researchers also have used various analytic strategies to address selection issues. These approaches include comparisons of siblings or first cousins, which hold family characteristics constant (Aaronson, 1997); instrumental variable analyses, which minimize unmeasured correlations between neighborhood characteristics and adolescent outcomes (Foster & McLanahan, 1996); behavior genetics models, which differentiate between genetic and environmental influences (Caspi, Taylor, Moffitt, & Plomin, 2000; Cleveland, 2003); and propensity score methods, which match adolescents who do and do not live in certain types of neighborhoods (Harding, 2003). However, only experimental designs can fully overcome the selection problem in neighborhood research (although other selection problems may arise).

A REVIEW OF NEIGHBORHOOD STRUCTURAL EFFECTS ON ADOLESCENT DEVELOPMENT

This review builds on previous summaries of published neighborhood research conducted during the 1990s (Leventhal & Brooks-Gunn, 2000, 2003a, 2004a). The field has continued

to proliferate in the twenty-first century (Entwisle, 2007; Sampson et al., 2002). To incorporate these recent developments, reviews of relevant databases were conducted following similar procedures as those used previously (Leventhal & Brooks-Gunn, 2000, 2003a, 2004a). In these reviews, we focused on the three structural dimensions (assessed by the census) most frequently examined: income/SES (affluence/high SES and poverty/low SES), racial/ethnic diversity, and residential instability. Our reviews yielded few and somewhat inconsistent findings for racial/ethnic diversity and residential instability, thus, only findings for SES are summarized here. Other neighborhood dimensions are considered in the subsequent section. In both sections, only studies that accounted for individual and family characteristics such as child sex, age, and race-ethnicity; family income and composition; and maternal education, age, and the like in the analysis were included due to potential selection issues.

Three domains of well-being are considered in turn: (1) educational and occupational achievement (test scores, grade failure, high school dropout status, college attendance, years of completed schooling, employment, and earnings), (2) emotional and social well-being (mental health, crime, delinquency, and substance use), and (3) sexual activity (age of initiation, number of partners, and contraception use) and childbearing. Whenever possible, we discriminate between findings for early adolescents (11–15 years old) and late adolescents (16–19 years old) because neighborhoods may have differential effects on outcomes during each developmental period (Aber, Gephart, Brooks-Gunn, & Connell, 1997). For instance, neighborhood influences may increase during late adolescence, when youth are often granted more autonomy than they are at younger ages, resulting in greater exposure to extrafamilial influences, including neighborhoods (Elliot et al., 1996).

Achievement

Across the studies reviewed, the strongest evidence was found for the association between

hood high SES and adolescent achievement (after accounting for child and background characteristics). Living in a neighborhood with more high SES residents was beneficial for both younger and older adolescents' achievement. This pattern of findings was supported in nonexperimental research through a variety of analytic techniques, and to a lesser extent by experimental research.

Research on neighborhood SES effects on adolescents' achievement drew primarily from nonexperimental city and regional studies with appended census data (Connell & Halpern-Felsher, 1997; Dornbusch, Ritter, & Schlegel, 1991; Entwisle et al., 1994; Halpern-Felsher et al., 1997). In general, these studies documented a positive association between neighborhood high SES/income and various measures of adolescents' achievement (math achievement, basic skills tests, grade point average, and educational risk score). This pattern of findings was confirmed more recently in a longitudinal neighborhood-based study of children who ranged in age from 4 to 17 years old and a multisite study of youth aged 10-17. The first neighborhood-based study drawing on a diverse sample of Chicago children found that the presence of managerial and professional neighbors was strongly associated with children's average verbal ability over 6 years (Leventhal, Xue, & Brooks-Gunn, 2006). The second neighborhood-based study drew on a representative sample of Ontario children and reported that a measure of neighborhood affluence during late childhood through adolescence was associated with young adult educational attainment, particularly among youth from nonpoor families (Leventhal, Georgiades, Racine, & Mustard, 2007). Finally, a multisite, cross-sectional study of ethnographically diverse, primarily European American adolescents documented a positive association between neighborhood median income and adolescents' verbal ability, but in this case the association was strongest among youth from lower income families (Gordon et al., 2003).

Additional findings on young adolescents' achievement from city and regional studies entail links between neighborhood low SES and related measures (e.g., male joblessness and female-headed households) and poor educational outcomes (Connell & Halpern-Felsher, 1997; Halpern-Felsher et al., 1997). Several of the studies reviewed also found that neighborhood SES may have more pronounced effects on young adolescent boys' achievement than on girls' achievement (Entwisle et al., 1994; Halpern-Felsher et al., 1997).

Studies of older adolescents have relied primarily on national data sets. A number of studies based on the PSID reported associations between neighborhood high SES/affluence and youth's educational attainment (high school graduation, college attendance, and years of completed schooling; Brooks-Gunn et al., 1993; Duncan, 1994; Halpern-Felsher et al., 1997); these associations were more salient among European American than among African American youth. However, one city-based study of African American adolescents found that the presence of managerial and professional neighbors was positively associated with boys' educational attainment (Ensminger, Lambkin, & Jacobson, 1996). In addition, a nonlinear association between this SES measure and youth's chances of completing high school was found in the Public Use Microdata Sample (PUMS), such that when the percentage of professional or managerial workers fell to five percent or fewer (or reached a tipping point), neighborhood effects were more pronounced, especially among African American males (Crane, 1991).

Findings from a quasi-experimental study in which low-income, minority youth residing in public housing in poor urban neighborhoods moved to the more affluent suburbs concur with the results of the nonexperimental literature. In a 10-year follow-up of the Gautreaux Program, youth who moved to the suburbs were found to be more likely to graduate from high school, take college preparatory classes, attend college, be employed, and earn higher

wages than were their peers who remained in the city (Rubinowitz & Rosenbaum, 2000). More recently, however, no achievement effects were reported in HUD's 5-year evaluation of the MTO program, which used a true experimental design (Leventhal, Fauth, & Brooks-Gunn, 2005; Sanbonmatsu, Kling, Duncan, & Brooks-Gunn, 2006).

The MTO findings must be understood in the context of a social experiment. Because social experiments occur in the real world and not in a laboratory with highly controlled conditions, several important features of MTO impact our interpretation of the "neighborhood effects" reported. Only approximately 50 percent of families offered vouchers used them to move to new neighborhoods. Many low-poverty families who relocated typically moved to poorer neighborhoods after the first year in which they were required to be in low-poverty neighborhoods. Moving is disruptive to youth's social networks and may offset benefits associated with more advantaged neighborhoods (Adam, 2004; Adam & Chase-Lansdale, 2002; Pribesh & Downey, 1999). Finally, and specific to education, because many families in MTO who moved remained in urban areas, children continued to attend highly disadvantaged urban public schools. In contrast, children in the Gautreaux study attended schools in advantaged suburban school districts. More in line with MTO, a 7-year follow-up of another quasi-experimental study of a desegregation effort in Yonkers, New York, in which all families remained in public housing within the same city and school district found that older adolescents who moved to middle-income neighborhoods reported poorer school performance than youth who remained in high-poverty neighborhoods (Fauth, Leventhal, & Brooks-Gunn, 2007).

Two recent nonexperimental studies with the PSID have focused on neighborhood low SES and its association with dropping out of high school (Crowder & South, 2003; Harding, 2003). In contrast to neighborhood high SES/affluence, neighborhood low SES had more

pronounced effects on African Americans' odds of dropping out of high school than European Americans', particularly among African American boys (Crowder & South, 2003). Of note is that the magnitude of the association between neighborhood disadvantage and African Americans' high school disruption increased over time from 1970 to 1990, the 1980s being the period on which much of the earlier neighborhood work with this sample was based (Brooks-Gunn et al., 1997). Finally, one study using another national data set indicates that neighborhood poverty during adolescence may have long-run associations with adult unemployment, particularly among males (Holloway & Mulherin, 2004). However, a quasi-experimental study of Canadian adolescents, which did not have the confounding of neighborhood and relocation like MTO, found that older adolescents who lived in public housing in poor neighborhoods did not differ in their earnings, employment, or welfare receipt at age 30 compared with peers from public housing in middle-income neighborhoods (Oreopoulos, 2003).

Other measures of neighborhood SES, such as the high school completion rate, percentage of female-headed households, and female employment rate, were found to be associated with educational attainment as well. Almost all of these studies were based on the PSID or other large, national studies (Aaronson, 1997; Brooks-Gunn et al., 1993; Duncan, 1994; Ensminger et al., 1996; Foster & McLanahan, 1996; Garner & Raudenbush, 1991). In a number of these studies, neighborhood SES effects on adolescent achievement were reported when techniques were used to address problems of selection bias or advanced statistical approaches were employed, including sibling analyses (Aaronson, 1997; Plotnick & Hoffman, 1999), instrumental variable analyses (Foster & McLanahan, 1996; cf. Evans, Oates, & Schwab, 1992), multilevel models (Garner & Raudenbush, 1991), and propensity score matching (Harding, 2003).

Behavioral and Emotional Outcomes

Growing evidence from well-designed studies supports the conclusion that neighborhood SES is associated with adolescent behavioral and emotional outcomes after accounting for background characteristics. Most notable are links between low SES neighborhoods and criminal, delinquent, and violent behavior among both younger and older adolescents.

Similar to studies of achievement, earlier studies examining neighborhood SES effects during young adolescence primarily drew from city and regional samples with appended census data. For example, in a rural Iowa sample of European American 8th and 9th graders, neighborhood low SES was positively associated with boys' psychological distress, and the percentage of single-parent families was positively associated with girls' conduct problems (Simons, Johnson, Beaman, Conger, & Whitbeck, 1996). Likewise, among 13- and 16-year-old boys in the Pittsburgh Youth Study, living in low-SES or "underclass" neighborhoods (characterized by poverty, unemployment, male joblessness, female headship, nonmarital childbearing, African American presence, and welfare receipt) was positively associated with youth engaging in delinquent and criminal behavior, and effects were more pronounced among younger than older adolescents, as well as among impulsive adolescents (Loeber & Wikström, 1993; Lynam et al., 2000; Peeples & Loeber, 1994; see also Beyers, Loeber, Wikström, & Stouthamer-Loeber, 2001).

Several recent multisite, neighborhood-based studies also find links between neighborhood SES and young adolescents' engagement in a range of problem behaviors. Results from the Family and Community Health Study (FACHS), which originally sampled 10- to 12-year-old African American children and their families in Georgia and Iowa living in a wide variety of neighborhood settings (i.e., not just urban central city neighborhoods), demonstrated an association between neighborhood low SES and affiliation with deviant peers (especially among early maturers) and girls'

(but not boys') substance use (Brody et al., 2001; Ge, Brody, Conger, Simons, & Murry, 2002; Gibbons et al., 2004). A related finding from the PHDCN study reveals that living in a low SES neighborhood was associated with violent behavior among adolescent girls (13–17 years old) who experienced early menarche (Obeidallah, Brennan, Brooks-Gunn, & Earls, 2004). Finally, another multilevel study conducted in three cities found that low levels of concentrated affluence were associated with young adolescent boys' greater externalizing of problems (Beyers, Bates, Pettit, & Dodge, 2003).

A number of recent studies have used data from the National Longitudinal Study of Adolescent Health (Add Health), a nationally representative, longitudinal study of middle and high school students, to explore aspects of neighborhood SES associated with adolescents' behavior and emotional outcomes. Most of this work has used a multilevel analytic framework. Research focusing on violent behavior reported that the proportion of single-parent families in the neighborhood, an indicator of low SES, was associated with adolescents' self-reported violent behavior (Knoester & Haynie, 2005), while another investigation found that neighborhood socioeconomic disadvantage was associated with this outcome (Haynie, Silver, & Teasdale, 2006). Two additional studies with this sample demonstrate associations between community disadvantage and adolescents' depressive symptoms (Wickrama & Bryant, 2003; Wickrama, Merten, & Elder, 2005).

Nonexperimental research focusing on older adolescence documents associations between neighborhood low SES and a range of problem behaviors, too. Two studies using data from a British national study found adverse associations between residence in low SES neighborhoods and adolescents' participation in crime and delinquency (Sampson & Groves, 1989; Veysey & Messner, 1999). Along these same lines, a national study of U.S. 10th graders found that the male joblessness rate was

positively associated with drug use; however, the poverty rate was negatively associated with drug use among these same youth (Hoffman, 2002). A neighborhood-based study in Chicago, however, found links between the presence of few managers and professionals in the neighborhood and older adolescents' self-reported violent behavior (Sampson, Morenoff, & Raudenbush, 2005).

Finally, Aneshensel and Sucoff (1996) examined the effect of neighborhood SES and racial-ethnic diversity simultaneously on the mental health outcomes of 12- to 17-year-olds in Los Angeles. Their results indicated that the prevalence of conduct disorder was highest among adolescents in low SES, African American neighborhoods and lowest among adolescents in low SES, Latino neighborhoods. The prevalence of oppositional defiant disorder, however, was highest among adolescents in middle SES communities with high concentrations of European Americans and Latinos and lowest among adolescents in low SES, African American neighborhoods. Latinos displayed more depressive symptoms than did European American and African American youth, except in low SES neighborhoods with high concentrations of Latinos.

In line with the nonexperimental literature revealing links between low-SES neighborhoods and older adolescents' social, emotional, and behavioral outcomes are experimental findings from the MTO program 5-year evaluation (Kling, Liebman, & Katz, 2007). Adolescent girls who moved to low-poverty neighborhoods reported less psychological distress, anxiety, and substance use and were less likely to be arrested (for both violent and property crimes) than girls who remained in public housing in high-poverty neighborhoods. Unfortunately, such benefits of moving to low-poverty neighborhoods were not seen among adolescent boys, who demonstrated some negative outcomes after moving. Interestingly, a 7-year evaluation of a quasi-experimental study of housing desegregation in Yonkers, New York, also found some negative effects,

especially among older adolescents. In this study, older adolescents who relocated to more advantaged neighborhoods reported more behavior problems and substance use than peers who remained in impoverished neighborhoods (Fauth, Leventhal, et al., 2007). In these experimental studies, it is likely that the disruptive effects of moving on social networks were more harmful among boys than girls in the case of MTO and among older than younger adolescents in the case of Yonkers.

Sexual Activity and Childbearing

Converging evidence from numerous national data sets as well as multilevel studies points to associations between neighborhood SES—especially low SES—and adolescents' sexual behavior and fertility (controlling for individual and family characteristics). This pattern holds among both younger and older adolescents. In addition, neighborhood employment measures appear to be associated with these outcomes, but the direction of effects is mixed.

Recently, increased attention in the neighborhood literature has focused on younger adolescents' sexual initiation. One study based on a Canadian national sample reported that among 12- to 15-year-olds, neighborhood disadvantage was associated with adolescent girls' sexual initiation overall and both girls' and boys' sexual initiation among those with a history of conduct problems (Dupéré, Lacourse, Willms, Leventhal, & Tremblay, 2008). Using multilevel data from the PHDCN, Browning and colleagues demonstrated in a series of studies a link between neighborhood concentrated poverty and sexual onset among youth 11–16 years of age (Browning, Buntington, Leventhal, & Brooks-Gunn, 2008; Browning, Leventhal, & Brooks-Gunn, 2004, 2005).

Studies using six different national data sets (National Survey of Adolescent Males [NSAM], National Survey of Children [NSC], National Survey of Family Growth [NSFG-III], PSID, PUMS, and Add Health) reported that indicators of neighborhood SES were associated with predominately older adolescents' sexual

activity. Across these studies, the presence of advantaged socioeconomic conditions such as affluent or professional neighbors was associated with a decreased risk of female adolescents' nonmarital childbearing (Billy & Moore, 1992; Brooks-Gunn et al., 1993; Crane, 1991; South & Crowder, 1999; c.f. Cubbin, Santelli, Brindis, & Braveman, 2005), whereas the absence of such resources, including high poverty and low housing values, was adversely associated with both boys' and girls' initiation of sexual intercourse, frequency of intercourse, number of partners, contraceptive use, pregnancy outcomes, and overall sexual risk behavior (Baumer & South, 2001; Cleveland & Gilson, 2004; Cubbin et al., 2005; Ku, Sonenstein, & Pleck, 1993; Ramirez-Valles, Zimmerman, & Juarez, 2002; Ramirez-Valles, Zimmerman, & Newcomb, 1998; South & Baumer, 2001; South & Crowder, 1999). Moreover, two studies found nonlinear associations, such that the odds of female youth bearing children increased when community disadvantage reached an extreme threshold (Crane, 1991; South & Crowder, 1999). Finally, the association between neighborhood poverty and adolescent girls' odds of nonmarital childbearing were confirmed in propensity score models (Harding, 2003).

Employment indicators were associated with adolescent sexual and fertility outcomes, although the pattern of results was inconsistent. Among adolescent males 15–19 years of age in the NSAM, a high unemployment rate was positively associated with impregnating someone and fathering a child (Ku et al., 1993), and among middle school and high school students in Add Health, the proportion of idle youth was associated with boys' sexual initiation (Cubbin et al., 2005). Likewise, among females in the NSFG-III and Add Health, unemployment and joblessness were positively associated with sexual initiation, frequency of intercourse, contraceptive use, and nonmarital childbearing (Billy, Brewster, & Grady, 1994; Billy & Moore, 1992; Cubbin et al., 2005). However, among these same young women in the

NSFG-III, but not Add Health, the percentage of women employed in the neighborhood was positively associated with timing of first intercourse and risk of premarital sex (Billy et al., 1994; Brewster, 1994b). In addition, among female youth aged 14–20 in the NSFG-III, female labor force participation was positively associated with noncontracepted first intercourse among African American, urban young women and with contracepted first intercourse among European American young women (Brewster, 1994a; Brewster, Billy, & Grady, 1993). Findings related to female employment may be related to the monitoring and supervision of youth as opposed to socioeconomic resources.

A FRAMEWORK FOR UNDERSTANDING POTENTIAL PATHWAYS OF NEIGHBORHOOD EFFECTS ON ADOLESCENT OUTCOMES

The research presented in the previous section documents associations between neighborhood structure and adolescent outcomes; however, it does not address the potential pathways through which these neighborhood effects are transmitted to youth. A widely held view among researchers is that neighborhood influences are indirect (or mediated), operating through various processes such as community social organizations, families, peers, and schools. In addition, neighborhood effects are thought to condition (or interact with) other contextual influences—particularly the family environment—in shaping adolescent development. Despite such expectations, much more theoretical than empirical work has explored mediated and moderated neighborhood effects on adolescent outcomes. Empirical investigations of underlying mechanisms of neighborhood influences have been hindered by the lack of a coherent framework outlined by outcome, age of child, and specific pathways, as well as by methodological limitations—particularly, adequate study designs and neighborhood measures. However, over the past several years

emerging empirical support concurs with expectations, indicating that neighborhood effects are largely indirect, operating through individual-, family-, and community-level processes.

In this section, three theoretical models for conceptualizing how neighborhoods might influence adolescent development are presented (Leventhal & Brooks-Gunn, 2000, 2001). The first model, *institutional resources*, posits that the quality, quantity, and diversity of community resources mediate neighborhood effects. The second model, *norms and collective efficacy*, speculates that the extent of community formal and informal institutions present to monitor residents' behavior (especially peer groups) and physical threats to residents accounts for neighborhood effects. The final model, *relationships and ties*, hypothesizes that parental attributes, social networks, and behavior as well as home environment characteristics transmit neighborhood influences. These theoretical frames were developed based on a review and analysis of neighborhood studies by Jencks and Mayer (1990), the literature on economic hardship and unemployment (Conger, Ge, Elder, Lorenz, & Simons, 1994; McLoyd, 1990), and work on social disorganization theory (Sampson, 1992; Sampson et al., 1997; Shaw & McKay, 1942; see Sampson & Morenoff, 1997, for a review).

These theoretical models are intended to be complementary rather than conflicting. For instance, institutional resource mechanisms may be most salient when studying high SES-achievement links, norms and collective efficacy processes may be most relevant for examining low-SES-definquency associations, and relationship pathways may be most useful for examining SES-sexual outcome links. In terms of developmental differences, relationship mechanisms might be more relevant for younger than older adolescents because families may exert a greater influence during this period, whereas community norms and processes may be more salient for older than for younger adolescents because of the

growing influence of peers during this period. Community institutional resources may play an equally important role both earlier and later in adolescence, but the specific resource of most relevance may differ for the two age groups. Accordingly, the present review of the theoretical models highlights aspects of each model that are most relevant to adolescents.

Institutional Resources

Economic resource perspectives, focusing typically on the family context, identify resources or opportunities to which children and youth theoretically have access (Becker, 1981; Brooks-Gunn, Klebanov, Liaw, & Duncan, 1995; Haveman & Wolfe, 1994). Extrapolating this model to neighborhoods, community resources include the quantity, quality, diversity, and affordability of several types of resources in the community pertinent to adolescents—schools, health and social services, recreational and social programs, and employment—that could influence well-being (Leventhal & Brooks-Gunn, 2000; Neuman & Celano, 2001).

For adolescents, schools are a primary vehicle through which neighborhood effects may operate on adolescents' achievement in particular. Relevant aspects of schools include quality, climate, norms, and demographic makeup. Living in a disadvantaged neighborhood is adversely associated with these school attributes as well as with adolescents' educational outcomes (Card & Payne, 2002; Jencks & Mayer, 1990). Several studies have looked at the intersection of neighborhood context and school norms regarding risky behavior. Findings indicate that neighborhood structure is associated with school norms, which in turn may be associated with adolescents' sexual initiation and their substance use (Eitle & McNulty Eitle, 2004; Ennett, Flewelling, Lindrooth, & Norton, 1997; Teitler & Weiss, 2000; see School Versus Neighborhood Influences section for additional details).

The availability, quality, and affordability of medical and social services in the community may be a potential pathway of neighborhood

influences, notably on mental and physical health (including sexual risk behavior and pregnancy). Although work examining this resource is scant, access, quality, and variety of health services vary as a function of family SES, with high income generally conferring beneficial effects (Newacheck, Hughes, & Stoddard, 1996; Newacheck, Stoddard, & McManus, 1993). Differences in health care services availability relevant to adolescents have been shown to vary as a function of neighborhood SES. Results based on Add Health indicate that high schools located in lower SES communities are less likely to offer school-based health services than schools in more advantaged communities (Billy et al., 2000). However, reduced availability of health services in disadvantaged communities does not necessarily explain differences in adolescent health behaviors or attitudes. For instance, several studies of adolescent sexual behavior found that the availability of family planning and abortion providers in the community was not associated with adolescents' sexual activity, fertility outcomes, or attitudes toward contraceptive use (accounting for neighborhood structure, Brewster et al., 1993; Hughes, Furstenberg, & Teitler, 1995). In contrast, another nationally representative study found that although availability of family planning clinics in the county of residence was not associated with adolescents' sexual activity, it was predictive of contraceptive use among sexually active adolescent girls (Averett, Rees, & Argys, 2002).

Another possible mechanism of neighborhood effects—particularly on physical and social development—is the presence of social and recreational activities such as parks, sports programs, art and theater programs, and community centers. Generally, studies of youth programs and after-school care point to these programs as having beneficial effects on adjustment, particularly among low-income youth (Eccles & Gootman, 2002). In the same manner, enrollment in these activities could be especially beneficial for adolescents living in disadvantaged neighborhoods. For example,

participation in organized activities was found to be most protective against cigarette smoking among adolescents exposed to higher levels of neighborhood risks in terms of SES and racial composition (Xue, Zimmerman, & Howard Caldwell, 2007; see also Coley, Morris, & Hernandez, 2004; and Pettit, Bates, Dodge, & Meece, 1999), and among low- and moderate-income African American youth, participation in locally based organized activities promoted affiliation with neighborhood prosocial peers (Quane & Rankin, 2006; see also Rankin & Quane, 2002). However, it is important to note that involvement in activities, such as community-based clubs, might have negative effects on adolescent adjustment in highly violent communities, possibly because it could increase exposure to violence (Fauth, Roth, & Brooks-Gunn, 2007).

In spite of the potential benefits associated with activity participation, adolescents living in low SES neighborhoods might have limited access to organized recreational activities as compared to their peers in more affluent communities. A neighborhood-based study of adolescent development in low- to middle-income neighborhoods found that the extent of prosocial activities varied across neighborhoods and was linked to problem behavior (Furstenberg, Cook, Eccles, Elder, & Sameroff, 1999; see also Furstenberg, 2001). Meanwhile, research on youth from affluent communities also points to the need for more after-school programs (or at least participation in such programs) to prevent youth from engaging in problem behaviors (Luthar, 2003). In addition, a recent review of the environmental correlates of youth's physical activity indicated that higher neighborhood crime levels were associated with lower participation in physical activities, although evidence was mixed regarding a direct link between availability of sports facilities and programs in the community and youth's physical activity (Ferreira et al., 2006). Two reasons might explain why availability is not consistently associated with participation. First, qualitative and quantitative research on

families in disadvantaged neighborhoods indicates that when social and recreational programs are not available in families' own communities, parents access resources from the larger surrounding community (Elder, Eccles, Ardelt, & Lord, 1995; Jarrett, 1997). Second, the link between availability and participation appears to vary as a function of neighborhood characteristics, with youth living in disadvantaged communities more likely to participate in neighborhood-based organized activities when offered the chance (Quane & Rankin, 2006).

The last institutional resource most relevant to achievement outcomes and possibly problem behaviors entails the supply of employment opportunities, access to jobs (including transportation), and adolescents' own expectations about available opportunities. Although studies have not examined neighborhood-employment links on adolescent development (most studies focus on young adults), we draw upon research on family-level SES differences in the consequences of adolescent employment (Bachman & Schulenberg, 1993; Gleason & Cain, 2004; Leventhal, Graber, & Brooks-Gunn, 2001; Mortimer, Finch, Ryu, Shanahan, & Call, 1996; Newman, 1999; Steinberg, Fegley, & Dornbusch, 1993; Sullivan, 1989). Specifically, the impact of adolescent employment (and available opportunities) on subsequent outcomes may be moderated by neighborhood SES, such that in disadvantaged neighborhoods, the effects of employment may be beneficial because fewer developmentally enhancing outlets beyond employment may exist. In contrast, in more affluent neighborhoods, where learning and social activities may provide more enriching alternatives to employment, the effects of employment may be more detrimental. A related finding supporting this view comes from a recent study that found that the association between longer work hours during middle and late adolescence and adolescents' heavy episodic drinking was moderated by community context, specifically rates of adolescent drinking: longer hours were more detrimental in lower risk counties (i.e., those

with low levels of adolescent alcohol use; Breslin & Adlaf, 2005).

At the individual level, adolescents' expectations about employment opportunities available to them are likely affected by their neighborhoods (including presence of working role models). These expectations as well as related feelings of hopelessness may be associated with adolescent outcomes, including educational attainment, substance use, crime, sexual activity, and childbearing (Billy et al., 1994; Bolland, 2003; Bolland, Lian, & Formichella, 2005; Willis, 1977).

Norms and Collective Efficacy

The norms and collective efficacy model draws heavily from social organization theory and its more recent formulations, particularly collective efficacy theory (Sampson, 1992; Sampson et al., 1997; Shaw & McKay, 1942). According to these perspectives, collective efficacy—defined as the extent of community-level social connections including mutual trust, shared values among residents, and residents' willingness to intervene on behalf of community—controls the ability of communities to monitor residents' behavior in line with social norms and to maintain public order (Sampson, Morenoff, & Earls, 1999; Sampson et al., 1997). Formal and informal community institutions are thought to act as regulatory mechanisms, and the capacity of these institutions to monitor residents' behavior—especially peer groups and physical threats, in turn—is hypothesized to be a function of specific community structural characteristics, including low SES, racial/ethnic diversity, residential instability, and single parenthood (Coulton, Korbin, Su, & Chow, 1995; Sampson, 1992; Sampson & Groves, 1989). For instance, in poor, residentially unstable, racially/ethnically diverse neighborhoods with many single parents, social organization is often low, resulting in the promulgation of adolescent problem behaviors such as crime and vandalism. In contrast, when social organization is high, adolescents are less likely to engage in these

negative behaviors and may display more prosocial behaviors such as school engagement and civic participation. Over the past decade, a number of researchers studying adolescents have tested various components of this model, and much of the work has focused on problem behaviors—delinquency, crime, violence, and substance use—and to a lesser extent sexual activity. This section reviews research on the different model components.

An important distinction to make is that the social connections described under the norms and collective efficacy model are more diffuse than the social networks discussed under the relationships model (see next section) and operate primarily at the community level (see Sampson, 1999, for further discussion of this distinction). In PHDCN, collective efficacy and social control (measured by a community survey) were found to be negatively associated with neighborhood socioeconomic disadvantage, level of crime and violence, and observations of physical and social disorder (Raudenbush & Sampson, 1999; Sampson et al., 1999; Sampson et al., 1997; see also Pattillo, 1998). Such links have also been reported in studies of adolescents. For example, in a study based on a nationally representative sample (Add Health) and two other studies with city-based samples of at-risk minority adolescent boys (juvenile offenders and adolescent boys from disadvantaged inner-city neighborhoods), structural characteristics were associated with parents' and youth's perceptions of community social organization (Chung & Steinberg, 2006; Tolan, Gorman-Smith, & Henry, 2003; Wickrama & Bryant, 2003); neighborhood social organization, in turn, was associated with adolescent adjustment. At both the neighborhood and individual levels, community social control of youth is negatively associated with a number of adolescent externalizing (delinquency and violence, affiliation with deviant peers, and carrying a concealed weapon) and internalizing (depressive symptoms) outcomes (after accounting for neighborhood structure; Brody et al., 2001; Chung & Steinberg, 2006;

Elliot et al., 1996; Molnar, Miller, Azrael, & Buka, 2004; Sampson, 1997; Sampson et al., 2005; Tolan et al., 2003; Wickrama & Bryant, 2003). Moreover, collective efficacy is associated with more private adolescent behaviors including delayed sexual onset and a lower number of sexual partners (Browning et al., 2008; Browning et al., 2004).

Peer group behavior and norms are central pathways through which neighborhood structure is anticipated to influence adolescent outcomes, especially social and emotional outcomes. Peer effects are generally hypothesized to be adverse because potential negative peer group influences are exacerbated when community institutions and norms fail to regulate their behavior. In disadvantaged contexts, neighborhood peers represent a significant proportion of adolescents' peer networks (Dolcini, Harper, Watson, Catania, & Ellen, 2005), and living in a socially disadvantaged neighborhood is positively associated with adolescents' affiliation with deviant peers as well as exposure to violent and unconventional peers (Brody et al., 2001; Dupéré, Lacourse, Willms, Vitaro, & Tremblay, 2007; Ge et al., 2002; Harding, 2007; Haynie et al., 2006; Quane & Rankin, 1998). Thus, affiliation with deviant peers may be facilitated in disadvantaged neighborhoods through increased opportunities to do so.

Accumulating research supports the notion that deviant peer affiliation is an important mediator of neighborhood structural and social organizational effects on adolescent behavior problems, such as delinquency and substance use (Chuang, Ennett, Bauman, & Foshee, 2005; Chung & Steinberg, 2006; Haynie et al., 2006; Meyers & Miller, 2004; Simons et al., 1996). For instance, a lack of formal and informal institutions present to supervise adolescent peer group activities has been found to mediate the association between neighborhood SES (and related characteristics) and adolescents' delinquent, criminal, and prosocial behavior (Sampson & Groves, 1989; Shaw & McKay, 1942; Veysey & Messner, 1999).

In addition, emerging empirical and ethnographic evidence suggests that peer characteristics, notably involvement with deviant and older peers, are potential mediators of neighborhood effects on adolescent sexuality and childbearing (Dupéré et al., 2008; Harding, 2005; South & Baumer, 2000). Other work has shown that peer interactions moderate neighborhood effects on adolescents' antisocial behavior, substance use, and school achievement, such that in high-risk neighborhoods, peer influences have more negative effects, whereas in low-risk neighborhoods, peer effects are more beneficial (Dubow, Edwards, & Ippolito, 1997; Gonzales, Cauce, Friedman, & Mason, 1996; Pettit et al., 1999).

Physical threats, including the extent of violence, the availability of harmful and illegal substances, and other general threats to well-being, are hypothesized to be associated with community mechanisms of control and subsequent adolescent outcomes, especially physical and socioemotional development. Two housing programs in which low-income families moved from public housing in high-poverty neighborhoods to less poor neighborhoods found that parents reported that getting away from drugs and gangs was their primary motivation for wanting to move (Briggs, 1997; Goering & Feins, 2003). In fact, initial and longer term follow-ups of these programs have found that children and youth who moved to more advantaged neighborhoods were less likely to be exposed to violence and danger than were peers who remained in poor neighborhoods (Fauth, 2004; Fauth, Leventhal, & Brooks-Gunn, 2005; Fauth et al., 2008; Katz, Kling, & Liebman, 2001; Kling et al., 2007). In nonexperimental work, youth from poor, urban neighborhoods who are exposed to high levels of community violence display internalizing and externalizing problems as well as physical and psychiatric symptoms (Cooley-Quille, Boyd, Frantz, & Walsh, 2001; Gorman-Smith, Henry, & Tolan, 2004; Gorman-Smith & Tolan, 1998; Haynie et al., 2006). In addition, several studies have found that neighborhood danger

accounted for links between neighborhood low SES and adolescent outcomes, including emotional problems and timing of first intercourse (Aneshensel & Sucoff, 1996; Pettit et al., 1999; Upchurch, Aneshensel, Sucoff, & Levy-Storms, 1999).

Access to illegal and harmful substances has been shown to vary as a function of neighborhood characteristics, with low-income/SES neighborhoods and those with high proportions of African Americans providing adolescents with greater access to alcohol, cigarettes, and cocaine than do higher income/SES neighborhoods or predominately European American neighborhoods (Duncan, Duncan, & Strycker, 2002; Fauth et al., 2005; Freisthler, Lascala, Gruenewald, & Treno, 2005; Landrine, Klonoff, & Alcaraz, 1997). Studies of disadvantaged youth found that adolescents' reports of drug availability in their neighborhoods were adversely linked with their substance use, offending behavior, and likelihood of gang affiliation (Chung, Hill, Hawkins, Gilchrist, & Nagin, 2002; Hill, Howell, Hawkins, & Battin-Pearson, 1999; Lambert, Brown, Phillips, & Jalongo, 2004). In addition, levels of drug activity in the neighborhood are positively associated with school rates of cigarette smoking (Ennett et al., 1997).

Relationships and Ties

According to the relationships and ties model, parental relationships are hypothesized to be a potential pathway of neighborhood effects on adolescent development, especially social and emotional well-being. This framework draws heavily from the family stress model developed from research on economic hardship and unemployment, in which links between family low income and adolescent outcomes are accounted for by parents' sense of financial strain, depression, and resultant parenting (Conger et al., 1994; Conger, Wallace, Sun, Simons, McLoyd, & Brodie, 2002; McLoyd, 1990). Parental relationships and support networks are thought to mediate and moderate associations between parents' (and possibly youth's) well-being and their

behavior. We broaden this model of family economic hardship to neighborhood disadvantage such that neighborhood disadvantage may affect parental well-being and subsequent adolescent outcomes through parental behavior and the home environment (see Figure 12.1). Beyond looking at aspects of neighborhood structure, such as poverty, that may serve as sources of disadvantage, more recently researchers have expanded disadvantage to include social features of neighborhoods that may pose challenges to parents, such as low collective efficacy, disorder, and violence (e.g., Simons, Simons, Burt, Brody, & Cutrona, 2005). We review research exploring whether these proposed individual and family mechanisms transmit neighborhood influences to adolescents as well as relevant work on the different components of the model.

Aspects of parental well-being thought to be associated with neighborhood residence include physical and mental health, efficacy, coping skills, and irritability. At both the individual and neighborhood levels, compelling evidence exists for links between adults' physical and mental health and neighborhood structural conditions, particularly SES (e.g., Cubbin, LeClere, & Smith, 2000; Diez-Roux, 2001; Hill, Ross, & Angel, 2005; Ross, 2000).

For example, experimental work indicates that low-income parents who moved from high- to low-poverty neighborhoods reported superior mental and physical health compared with parents who remained in high-poverty neighborhoods (Fauth et al., 2008; Kling et al., 2007). Another study based on adolescent reports found that neighborhood disadvantage was positively associated with family stress (after accounting for family SES: Allison et al., 1999). Neighborhood structural characteristics, and parental well-being have also been linked with parenting practices and adolescent outcomes. Among families in disadvantaged neighborhoods, parental efficacy mediated the use of family management strategies employed with adolescents among African American parents but not European American parents (Elder et al., 1995). In addition, maternal self-esteem was found to moderate the positive association between the neighborhood drop-out rate and adolescent risk-taking behavior, such that this association was enhanced among youth with mothers with low self-esteem (Kowaleski-Jones, 2000). Finally, a study examining the family stress model within a sample of African American adolescent boys found that neighborhood poverty indirectly

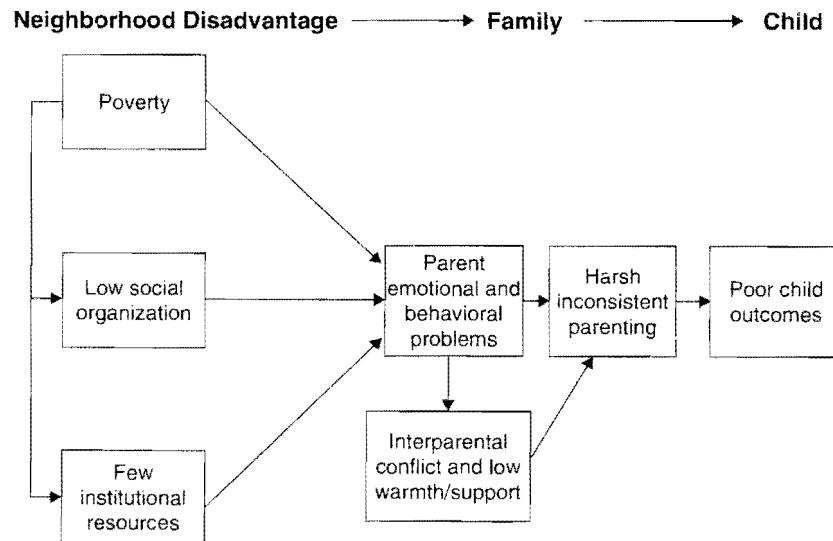


FIGURE 12.1 Model of Neighborhood Disadvantage

affected violent behavior by means of family stress and conflict and by means of adolescents' own feelings of self-worth (however, analyses did not control for individual and family background characteristics; Paschall & Hubbard, 1998).

Support networks, including access to friends and family and connections within neighborhood, may intervene between neighborhood economic resources and adolescent well-being (Cook, Shagle, & Degirmencioglu, 1997). These support networks may buffer parents from the stressors of neighborhood poverty, violence, and disorder and in so doing may diminish the adverse effects of low parental functioning on adolescent development (Conger et al., 1994; Elder et al., 1995; McLoyd, 1990; Ross & Jang, 2000). It is unclear whether the density of support networks varies by neighborhood SES and racial/ethnic diversity; support may be strongest in middle-income neighborhoods (compared with low- and middle-income neighborhoods) as well as in those with high concentrations of immigrants, particularly Latino populations (Klebanov, Brooks-Gunn, & Duncan, 1994; Molnar, Buka, Brennan, Holton, & Earls, 2003; Rosenbaum, Popkin, Kaufman, & Rusin, 1991). For parents, social connections within the community appear to be particularly useful for job referral networks and for assisting with monitoring and caring for children (Coleman, 1988; Jones, Forehand, O'Connell, Armistead, & Brody, 2005; Logan & Spitze, 1994). With respect to adolescents' own relationships and ties, in a sample of adolescents receiving social services, adolescents received support from family and peers appeared to buffer the positive association between reported neighborhood problems and their mental health, especially internalizing problems (Stiffman, Hadley-Ives, Elze, Johnson, & Doré, 1999).

Neighborhood conditions—namely poverty, violence, and danger—are hypothesized to be associated with several parenting behaviors—warmth, harshness, and supervision and monitoring—and subsequent adolescent

development. Both quantitative and qualitative work on family economic hardship reveals that parental stress and anxiety may have the largest impact on harsh parenting (Conger et al., 1994; McLoyd, 1990). In a quasi-experimental study, both younger and older adolescents who moved from poor to less poor neighborhoods reported receiving less harsh parenting than did youth who remained in poor neighborhoods (Fauth, Leventhal et al., 2007; *c.f.*, Leventhal & Brooks-Gunn, 2005). Along these lines, in poor and dangerous neighborhoods, parent-child relationships have been shown to be marked by low warmth and high aggression (Earls, McGuire, & Shay, 1994; Klebanov et al., 1994; Taylor, 2000), which may be linked to adolescent problem behavior (Beyers et al., 2001). In fact, two studies report that involved parenting and close parent-child relationships buffered adolescents' development (peer deviance and number of sexual partners) from the adverse consequences of neighborhood disadvantage (Brody et al., 2001; Cleveland & Gilson, 2004), while others have found that such parenting behaviors lost their effectiveness in highly disadvantaged neighborhoods (Gorman-Smith, Tolan, & Henry, 2000; Knoester & Haynie, 2005; Wickrama & Bryant, 2003). Yet other research demonstrates that the beneficial effects of parental involvement on sexual risk behavior were amplified in more advantaged neighborhood settings (Cleveland & Gilson, 2004; Roche et al., 2005), or that the adverse effects of uninvolved parenting on adolescent delinquency were exacerbated in more disadvantaged neighborhoods (Roche, Ensminger, & Cherlin, 2007).

A number of well-designed, multilevel studies have also explicitly tested mediation models, and most have focused on social organizational features of neighborhood rather than poverty and other aspects of structural disadvantage (though all account for neighborhood structure). For example, a longitudinal study based on the FACHS data set found that increases in neighborhood collective efficacy over time were associated with increased

authoritative (warm and firm) parenting, and that increases in authoritative parenting, in turn, were associated with decreases in adolescent delinquency and affiliation with deviant peers (Simons et al., 2005). Two cross-sectional studies, also focusing on neighborhood organization, provide further support for indirect neighborhood effects. The first study, based on a sample of male juvenile offenders, reported that ineffective parenting (a composite of low warmth, limited knowledge, and lax monitoring) partially mediated the association between neighborhood disorder and adolescents' reported peer deviance (Chung & Steinberg, 2006). The second study, using data from Add Health, found that parental acceptance and involvement accounted for the association between neighborhood collective socialization and adolescent depressive symptoms (Wickrama & Bryant, 2003). Finally, another study found that quality of parenting (monitoring, warmth/support, inductive reasoning, harsh discipline, hostility, and communication), assessed through videotaped parent-child interactions, mediated the positive association between community disadvantage and adolescents' problem behavior (Simons et al., 1996).

In the field of neighborhood research, parental supervision and monitoring are thought to be particularly important during the adolescent years by modulating adolescents' exposure to community influences (Beyers et al., 2003; Browning et al., 2005; Gorman-Smith et al., 2004). Along these lines, a number of ethnographic researchers have observed that parents in dangerous and impoverished neighborhoods may use restrictive monitoring techniques to limit their adolescents' exposure to negative community influences (Anderson, 1999; Burton, 1990; Burton & Jarrett, 2000; Furstenberg, 1993; Jarrett, 1997). One quasi-experimental study of moving from low- to middle-income neighborhoods supports this finding: parents who moved to advantaged neighborhoods reported less stringent monitoring than did parents who remained in low-income neighborhoods (Fauth, Leventhal, et al.,

2007). In terms of links with adolescent outcomes, parental monitoring of early dating behavior was found to mediate the positive association between neighborhood low SES and teenage childbearing (Hogan & Kitagawa, 1985; c.f. Baumer & South, 2001; South & Baumer, 2000).

Accumulating research has focused on how the intersections between neighborhood contexts and parental monitoring, supervision, and control are associated with adolescent outcomes: much of this work draws from neighborhood-based studies. For instance, in the PHDCN sample, neighborhood collective efficacy was associated with delaying sexual onset only among youth who experienced low levels of parental monitoring (Browning et al., 2005). In contrast, within a sample of low- to moderate-income African American families, also in Chicago, the beneficial effects of parental monitoring on promoting competency and deterring problem behavior were enhanced when collective efficacy was low (Rankin & Quane, 2002). Similar findings regarding the importance of monitoring and control for protecting youth against negative outcomes in more disadvantaged neighborhoods have been reported by others as well (Beyers et al., 2003; Roche et al., 2005), particularly when high levels of monitoring are used in combination with high levels of emotional support (Brody et al., 2001; Gorman-Smith et al., 2000). In contrast, additional research demonstrates that the deterrent effects of parental control on young adolescents' conduct problems are less effective in communities marked by danger and disorder (Simons et al., 2002), while another study of low-income, minority families found that permissive and disengaged parenting were associated with adolescent boys engaging in more delinquency in the most dangerous and socially disorganized neighborhoods (Roche et al., 2007).

Several characteristics of the home environment may act as vehicles of neighborhood influences on youth—physical home environment, presence of routines and structure, and

exposure to violence. The physical home environment may be most salient for adolescents' health. Neighborhood low income (compared with middle income) is negatively associated with quality of physical home environments (after controlling for family SES; Klebanov et al., 1994). Nonexperimental evidence reveals that children and adolescents living in poor neighborhoods may be at risk for injury and asthma (e.g., Borrell et al., 2002; Soubhi, Raina, & Kohen, 2004; Wright & Fisher, 2003). This situation is probably in part due to quality of the physical home environment.

The presence of family routines and structure, such as regular mealtimes and homework times, are thought to be significant for adolescents' social development (Boyce, Jensen, James, & Peacock, 1983; Bradley, 1995). At the theoretical level, it has been hypothesized that such routines may be weak in neighborhoods characterized by high poverty and unemployment, marked violence, and low social cohesion (Leventhal & Brooks-Gunn, 2000; Wilson, 1987, 1991). Two experimental studies found no effect of moving from poor to less poor neighborhoods on family routines; however, this hypothesis remains to be further tested (Fauth et al., 2005; Leventhal & Brooks-Gunn, 2005).

Finally, exposure to violence (as a witness or a victim) may be a potential mechanism for neighborhood effects on adolescents' physical and emotional health in particular (Wright, 1998). Living in a poor neighborhood is associated with children's exposure to violence in the community and in the home (Coulton, Korbin, & Su, 1999; Coulton et al., 1995; Martinez & Richters, 1993; Richters & Martinez, 1993). As noted before (see the section on Norms and Collective Efficacy), findings suggest that exposure to violence in the community is associated with adolescent adjustment (e.g., Gorman-Smith et al., 2004; Gorman-Smith & Tolan, 1998; Haynie et al., 2006); however, it is unclear if exposure to community violence has an independent association with child and adolescent well-being beyond co-occurring

exposure to violence in the home (see Buka, Stichick, Birdthistle, & Earls, 2001 for a review). Additional research is needed to elucidate how the intersection of exposure to violence in the home and the community affects adolescent development.

EMERGING TRENDS AND UNRESOLVED ISSUES

In this section, we review some emerging trends in the neighborhood literature that have been alluded to in our review thus far. Specifically, we review findings on individual characteristics that appear to modify neighborhood effects and explore potential explanations. In addition, we discuss some unresolved issues that bear on the theoretical and empirical significance of neighborhood influences on adolescent development including whether adolescence is a salient time for neighborhood influences and the relative importance of neighborhood context as compared with school context.

Modifiers of Neighborhood Effects

Our review of the literature on neighborhood structural effects on adolescents' development suggests that associations among neighborhood SES and adolescent outcomes vary as a function of key individual characteristics, notably, gender, race/ethnicity, and possibly pubertal timing and personality traits. Perhaps the most compelling evidence exists for gender differences in neighborhood SES effects on adolescent development, although the findings to date have been mixed across the nonexperimental and experimental literature. In the nonexperimental literature, the strongest support for gender differences is seen with respect to achievement, with boys benefiting more from affluent/high SES neighborhoods and being hindered more by poverty/low SES, especially African American boys in the case of poverty/low SES (Connell, Halpern-Felsher, Clifford, Crichlow, & Usinger, 1995; Crane, 1991; Crowder & South, 2003; Ensminger et al., 1996; Entwisle et al., 1994; but see Ceballo,

McLoyd, & Toyokawa, 2004). Although fewer studies of social and emotional outcomes have explored gender differences in neighborhood SES effects, the studies reviewed earlier suggest that the association between low SES and this class of outcomes is more pronounced among boys than girls, which may be a function in part of the lower prevalence of risky behaviors displayed by girls as compared with boys. A similar conclusion indicating stronger effects among boys was reached in another recent review looking at gender differences in neighborhood effects on conduct problems and delinquency (Kroneman, Loeber, & Hipwell, 2004). This review also concluded that boys and girls tended to be differentially influenced by specific neighborhood characteristics, with girls being especially sensitive to the proportion of single-parent families and the presence of affluent neighbors. Finally, gender differences in neighborhood effects on adolescents' sexual behavior in the studies reviewed varied as a function of the specific outcome under study (i.e., childbearing/impregnating someone versus age at sexual initiation), but also according to other defining individual characteristics such as race/ethnicity.

Although findings from early MTO site-specific evaluations, which used experimental designs, were consistent with patterns seen in the nonexperimental literature, the recent 5-year results, as reviewed previously, have not been. Specifically, 2–3 years into the program, low-income children and adolescents who moved to low-poverty neighborhoods had higher educational achievement, superior mental health, and fewer arrests for violent crime than their peers who remained in high-poverty neighborhoods, with effects largely restricted to boys (Goering & Feins, 2003; Katz et al., 2001; Leventhal & Brooks-Gunn, 2003b, 2004b; Ludwig, Duncan, & Hirschfield, 2001). Despite these early positive program effects on boys, a more recent cross-site, 5-year follow-up evaluation found that adolescent girls who moved to low-poverty neighborhoods were faring better than their peers who remained in

high-poverty neighborhoods in most of these domains and that boys in low-poverty neighborhoods experienced minimal if not negative outcomes compared with peers in high-poverty neighborhoods (Kling et al., 2007; Kling, Ludwig, & Katz, 2005).

Although the results from the nonexperimental and experimental literature on gender differences in neighborhood effects appear to be at odds, potential explanations for such gender differences reconcile some of the discrepancies when considered in the larger context of MTO as discussed earlier (see section on Achievement). First, only a handful of studies, primarily emanating from sociology, have considered how neighborhoods might contribute to gender differences in adolescent outcomes. These researchers have speculated that family socialization practices largely account for gender differences in neighborhood SES effects. Specifically, parents may provide less supervision and regulation of boys' activities relative to girls', resulting in boys' greater exposure or susceptibility to neighborhood influences (Ensminger et al., 1996; Entwisle et al., 1994; Hagan, Simpson, & Gillis, 1987; Kroneman et al., 2004). Thus, for boys, neighborhood influences may operate more through processes outside of the home, especially through interactions with peers; whereas, for girls, neighborhood influences may operate more through processes inside the home, especially via parent-child interactions (Clampet-Lundquist, Duncan, Edin, & Kling, 2006; Kroneman et al., 2004). If neighborhood conditions are advantageous, exposure may benefit boys more than girls unless it results in contact with more deviant peers (for example, as might have been the case in MTO). In contrast, in disadvantaged neighborhoods, lower levels of exposure may protect girls from adverse outcomes, particularly in the case of a supportive home environment.

Findings on gender differences also point to the salience of race-ethnicity as a potential moderator of neighborhood influences. Minority youth are more likely than their

nonminority peers to reside in poor, segregated neighborhoods (Kahn, Kaplowitz, Goodman, & Emans, 2002; Klebanov et al., 1994; Massey & Denton, 1993). In addition, these neighborhoods are often marked by pervasive crime and violence, low social cohesion, delinquent peer groups, and low-quality schools (Jencks & Mayer, 1990; Sampson, 1997; Sampson & Raudenbush, 1999). African American families' neighborhoods are also more likely than European American families' neighborhoods to be disadvantaged in terms of their embeddedness in larger spatial areas of structural and social disadvantage (Morenoff, Sampson, & Raudenbush, 2001; Sampson et al., 1999). Not only are African American neighborhoods objectively more disadvantaged than comparable European American neighborhoods, but they are also more likely to be perceived as more disordered by residents of all races (Sampson & Raudenbush, 2004). The consequence of this difference in the larger environments in which European American and African American youth live is that the influence of neighborhood advantage, such as high SES, may have less impact on the well-being of African American adolescents than on that of European American adolescents and, conversely, that low SES may have more adverse consequences for African American than European American youth (e.g., Crowder & South, 2003).

Despite the apparent threats to well-being accrued to African American youth in predominantly poor and/or African American neighborhoods, research with Latinos suggests that high concentrations of immigrants and/or Latinos may be protective for adolescents, especially Latino youth (Aneshensel & Sueoff, 1996; Browning et al., 2008; Sampson et al., 2005). In ethnic enclaves, more traditional norms may prevail that prohibit youth from engaging in problematic behavior, and such communities may be socially cohesive, which is also protective (García Coll & Szalacha, 2004; Portes & Rumbaut, 1996). Thus, the intersection of race/ethnicity and neighborhood

structure may have a complex association with adolescent development.

In addition to gender and race/ethnicity, an emerging literature focusing on risky behaviors suggests that other individual characteristics, specifically, pubertal timing and personality traits related to conduct problems and antisocial behavior, are also likely to moderate the impact of neighborhood SES on adolescent outcomes. Generally, these studies indicate that neighborhood disadvantage amplifies the impact of these individual-level risk factors. In other words, the combination of individual and neighborhood risks seems to be especially problematic. For example, early physical maturation appears to increase the chances that adolescent girls in disadvantaged neighborhoods will engage in problem behaviors such as violence and substance use (Foshee et al., 2007; Ge et al., 2002; Obeidallah et al., 2004). Among boys in the Pittsburgh Youth Study, an interaction effect revealed that the link between impulsivity and delinquency was amplified in disadvantaged neighborhoods (Lynam et al., 2000), although this result was not replicated in the Add Health sample (Vazsonyi, Cleveland, & Wiebe, 2006). Moreover, other results obtained in a Canadian national sample indicated that a history of conduct disorder and related personality traits accentuated the threats posed by disadvantaged neighborhoods to youth gang affiliation and early sexual initiation (Dupéré et al., 2008; Dupéré et al., 2007). Explanations for these amplification effects usually revolve around differential peer and family processes as a function of neighborhood context. For instance, Dupéré et al. (2008) found that affiliation with deviant and older peers partly explained why vulnerable adolescent girls living in a disadvantaged neighborhood were more likely to experience early sexual initiation. Similarly, neighborhood disadvantage and related conditions may further strain parent-adolescent relationships already challenged by other circumstances such as early maturation or difficult personality traits (Obeidallah et al., 2004).

Timing of Neighborhood Influences

Theoretically oriented work suggests that the impact of neighborhoods increases during adolescence compared with earlier childhood because parents may begin to grant their older children greater autonomy, resulting in more exposure to extrafamilial influences (Bronfenbrenner, 1979; Maccoby & Martin, 1983; Paikoff & Brooks-Gunn, 1991; Steinberg & Morris, 2001). Given general restrictions on adolescents' mobility, neighborhoods provide as well as organize opportunities for social interactions and out-of-school activities. Early and middle adolescence also entail significant changes in physical maturation brought on by puberty, advanced cognitive capacities (e.g., ability to think more abstractly), shifts in school climate and organization with the move from elementary to middle school and then high school (e.g., less personal, more restrictive, and more competitive), and alterations in salient relationships in the family and peer group (Feldman & Elliott, 1990; Graber, Brooks-Gunn, & Petersen, 1996; Steinberg & Morris, 2001). Each of these challenges has implications for the prominence of neighborhood influences during adolescence (compared with earlier childhood). However, somewhat surprisingly, almost no research has explored this essential premise regarding the salience of adolescence as a developmental period for heightened neighborhood influences.

In contrast to research on neighborhood income and SES, research on family economic status has explicitly tested whether the association between economic conditions and developmental outcomes varies across developmental periods—early childhood, middle childhood, early adolescence, middle adolescence, and young adulthood. This shortcoming in the neighborhood literature results in large part from the fact that a majority of the existing work is cross-sectional, based on neighborhood residence at a single point in time, or both. A study by Wheaton and Clarke (2003) using longitudinal data on children followed from early to middle childhood into

late adolescence found that neighborhood SES during early to middle childhood had more pronounced effects on mental health in late adolescence than neighborhood conditions during middle or late adolescence (see also Leventhal & Brooks-Gunn, 2001). Consistent with these findings is the work on family income and poverty, which indicates that family economic resources during early childhood, as opposed to other developmental periods, are most salient for late adolescent outcomes, notably educational attainment (Duncan & Brooks-Gunn, 1997). Together, this evidence may challenge the notion that adolescence is an especially significant period for neighborhood influences, at least as far as socioeconomic conditions are concerned. We caution any firm conclusions at this time until more research is available to contribute to this debate.

School Versus Neighborhood Influences

School and neighborhood represent two primary extrafamilial contexts for adolescent development where youth spend substantial amounts of time (Gershoff & Lawrence, 2006). The extent of exposure suggests that both contexts could exert pronounced influence on development during adolescence, but distinguishing school and neighborhood effects and their relative significance is a difficult task given the nonnegligible overlap between these two contexts. This situation is due in part to the fact that neighborhood characteristics affect school resources and school choice, indicating that school could be a powerful mediator of neighborhood effects (Lauen, 2007; Leventhal & Brooks-Gunn, 2000; Waanders, Mendez, & Downer, 2007). Yet, school characteristics such as composition and achievement also impact neighborhood conditions, such as property values (Bogart & Cromwell, 2000). Peers also serve as a source of overlap between the two contexts, with large portions of adolescent peer networks comprised of school- and neighborhood-based friendships (Dishion, Andrews, & Crosby, 1995; Dolcini et al., 2005; DuBois &

Hirsch, 1990). Further, ethnographic evidence suggests that among inner-city youth, significant peer conflict occurring at school often originates in the neighborhood, and vice versa (Mateu-Gelabert & Lune, 2003). For these reasons, and because limited research, particularly methodologically rigorous work, has considered simultaneous associations between neighborhood and school characteristics with individual adolescent outcomes (as opposed to aggregated school or neighborhood outcomes; Eitle & McNulty Eitle, 2004; Emmett et al., 1997), it is very difficult to disentangle neighborhood from school effects or to assess the relative influence of each.

Somewhat surprisingly, nonexperimental studies focusing on achievement appear to find that neighborhood effects were equivalent to or stronger than school effects (Bowen & Bowen, 1999; Card & Rothstein, 2007; Eamon, 2005; Garner & Raudenbush, 1991; Raudenbush, 1993). For example, multilevel studies of Scottish adolescents found more variation in educational attainment at the neighborhood than at the school level and that neighborhood deprivation was negatively associated with attainment, even after controlling for school characteristics (Garner & Raudenbush, 1991; Raudenbush, 1993). In addition, Card and Rothstein (2007), using a sample of roughly one-third of SAT test takers in the 1998–2001 high school graduation classes, found that when both neighborhood and school segregation were examined simultaneously, only neighborhood segregation was associated with the city-level Black–White gap in test scores.

In contrast to the nonexperimental work on achievement, research on behavioral outcomes tends to find that neighborhoods and schools have comparable effects, or that schools are more significant (Cook, Herman, Phillips, & Settersten, 2002; Duncan, Boisjoly, & Harris, 2001; Teitler & Weiss, 2000). For instance, a multilevel study (students nested in schools and in neighborhoods) examining sexual initiation among Philadelphia youth aged 14–18

found that there was more between-school than between-neighborhood variation in youth's sexual activity, and that when the two contexts were considered simultaneously, only school variation remained significant (Teitler & Weiss, 2000). Another study used Add Health to look at various contextual influences on achievement and delinquency by comparing correlations between pairs of siblings within a family, between best friends, between grade-mates within a school, and between schoolmates living in the same neighborhood (Duncan et al., 2001). Results indicated that family and peer contexts were more strongly associated with adolescent outcomes than school and neighborhood contexts, which both yielded similarly weak associations.

Findings from the experimental literature also bear on the neighborhood vs. school debate. These studies suggest that as far as achievement is concerned, schools are an integral part of "neighborhood effects" in the context of housing mobility programs. As discussed earlier, in the Gautreaux Program where children changed neighborhoods and school districts by moving from the city to the affluent suburbs, youth demonstrated achievement benefits (Rubinowitz & Rosenbaum, 2000). In contrast, in the MTO and Yonkers studies, where neighborhood change was not necessarily accompanied by a change in school and/or school district, such benefits were not evident (DeLuca, 2007; Fauth, Leventhal et al., 2007; Leventhal & Brooks-Gunn, 2005; Sanbonmatsu et al., 2006).

Taken together, the nonexperimental and experimental studies suggest that both neighborhood and schools matter for adolescent development, but that their relative influence may depend on the outcome under investigation. For achievement, results from experimental studies suggest that neighborhood advantage without corresponding school advantage may not generate benefits for adolescent outcomes, indicating that schools may be a vehicle through which neighborhood effects operate (although results from limited nonexperimental studies are mixed on this score).

For behavioral outcomes, the relative strength of school versus neighborhoods influences suggests that schools may not serve as an indirect route for neighborhood effects for these outcomes. They also point to the potential importance of peer interactions, which occur in both contexts but apparently most consistently at school (Dolcini et al., 2005).

POLICY IMPLICATIONS AND FUTURE DIRECTIONS

Adolescence is a period marked by expanding social interactions. Therefore, the goal of this chapter was to examine the influence of one social context on adolescent development—neighborhoods. We took as our starting point that neighborhoods likely play an important role during this phase of the life course (though we also note that the premise regarding adolescence as a uniquely susceptible period remains to be tested). The empirical evidence was reviewed to this end, followed by specification of a framework for studying the pathways of neighborhood influences on developmental outcomes. An overview of methodological issues was also provided along with some emerging trends and debates in the field. In conclusion, an integration of the empirical, theoretical, and methodological findings is presented in this section, along with policy implications and directions for future research.

Findings from our review of the literature revealed growing support for neighborhood SES effects on adolescent development. These effects were not restricted to a particular domain; however, the specific aspect of SES that mattered most varied by outcome. Neighborhood high SES was positively associated with adolescents' educational achievement, and neighborhood low SES was adversely associated with their behavioral and social well-being and with sexual and fertility outcomes. Findings were generally consistent with respect to both older and younger adolescents, particularly in the nonexperimental studies that drew on neighborhood-based studies or national samples.

Despite consistent patterns of results, the overall size of neighborhood structural effects reported in nonexperimental studies has been small to modest, accounting for approximately 5%–10% of the variance in adolescent outcomes (after adjusting for child and family background characteristics; see also Entwisle, 2007; and Sampson et al., 2002). In most studies, other factors, such as family characteristics including income and parent education, appear to matter more than neighborhood residence characteristics. In comparison to nonexperimental studies, the limited experimental work suggests somewhat larger neighborhood income/poverty effects on adolescent development, at least when low-income youth and their families were given the opportunity to move from poor to less poor neighborhoods; however, these effects were both positive and negative. Together, these findings suggest that neighborhood influences contribute to adolescents' developmental outcomes and should be incorporated into research on this phase of the life course.

To understand the observed associations between neighborhood structure and adolescent development requires drawing upon our theoretical models—institutional resources, norms and collective efficacy and relationships and ties. The models proposed within this framework highlight different underlying mechanisms (individual, family, school, peer, and community), with the utility of each model dependent on the outcome under investigation and the age group studied. Accordingly, we use these models to interpret the findings from descriptive studies of neighborhood effects in conjunction with relevant research findings examining processes of influence.

The association between neighborhood high SES and achievement is best understood in accordance with the institutional resource model. Affluent neighborhoods may have higher quality schools as well as students with more achievement-oriented norms than do less advantaged communities. Economically advantaged neighborhoods also may have

more resources that promote learning, such as libraries and educational programs, than do more disadvantaged communities. As reviewed, some empirical support exists for the premise regarding school quality. Alternatively, family relationships may be at work. High SES neighborhoods may be conducive to the maintenance of home environments with structure and routines that foster educational attainment; however, little work has examined this hypothesis.

The associations among exposure to low SES neighbors and mental health problems, delinquency, crime, sexual activity, and child-bearing are best understood within the rubric of the norms and collective efficacy model. In economically and socially disadvantaged neighborhoods, community-level supervision of youth may be lax, resulting in fewer institutions that regulate adolescent peer group behavior. Compelling evidence, as reviewed, exists to support this argument for a range of risky behaviors. In addition, according to the institutional resource framework, low SES neighborhoods may lack social and recreational resources such as after-school and youth programs, which in turn, adversely affects adolescents' adjustment. Again, research indicates this situation to be the case. Adolescents in low SES neighborhoods also may have low expectations about the opportunities available to them, resulting in a disincentive to avoid problem behavior; very little empirical work addresses this hypothesis. Finally, although findings are quite mixed, growing research points to relationship mechanisms, often in response to or in conjunction with neighborhood low SES and other forms of social disadvantage, as contributing to links between low SES and adolescent problem behavior, particularly parental supervision and monitoring of youth and involved and supportive parenting.

One can use the theoretical models described in this chapter to interpret the results of the literature review, but much more work remains to be done in conceptually oriented neighborhood research on adolescents. As we have

described, an increasing number of researchers are beginning to approach this challenge. Both the norms and collective efficacy and relationships and ties models have been most widely tested, particularly with respect to problem behavior. Researchers have even begun to test these models jointly, moving the field another big step forward.

In many ways, conceptually focused neighborhood research has been hampered by methodological limitations. Specifically, studies that are not designed to study neighborhood effects often lack variation within and between neighborhoods to test theoretical models, nor do these studies measure (or at least measure reliably) the neighborhood processes necessary for examining theoretical models, such as social control and school norms, or family mechanisms, such as parental supervision.

To assess the neighborhood processes discussed under the institutional resource and norms and collective efficacy models, which appear to be especially important for understanding neighborhood influences on adolescent development, alternative methodologies are required. The strategies reviewed and recommended include community surveys, systematic social observations, and alternative administrative data sources. The advantage of these approaches is that they provide measures of neighborhood dimensions (beyond structure) obtained from independent sources (as opposed to participant ratings, which are often subject to threats of nonindependence of measurement). An important corollary is that measurement and analytic models accommodate multilevel structures (i.e., raters or participants nested within neighborhoods). Aside from neighborhood-based studies, which typically address these design and measurement limitations, experimental studies are advocated because they overcome problems of selection or omitted variable bias present in nonexperimental neighborhood research.

Testing theoretical models permits the identification of specific underlying mechanisms of neighborhood influences, which is necessary

for drawing policy recommendations. The findings presented in this chapter suggest that the aspect of neighborhood most sensibly targeted by policy makers and practitioners depends on the outcome under consideration. If adolescents' educational attainment is the primary outcome of interest, focusing on potential pathways of high SES, such as school quality, would be recommended. Alternatively, if adolescent delinquent, violent, and sexual behaviors are the target, then building community mechanisms of control would be recommended, as well as providing recreational and social programs for youth. In addition, another strategy would be to work with families to help parents successfully monitor children and to foster close parent-child relations. Moreover, altering these potential pathways of neighborhood influences can be achieved through a variety of mechanisms. As we have noted, current policy efforts that have relocated families out of high-poverty neighborhoods into nonpoor neighborhoods have met with mixed success, as have community-based efforts to alter the economic and social conditions of existing neighborhoods where families (typically those who are poor) live (Kubisch et al., 2002).

In summary, neighborhoods appear to matter for adolescent development; however, *how* they matter is only beginning to be elucidated. Process-oriented research is needed to design effective neighborhood-focused programs and policies aimed at enhancing the lives of adolescents and their families.

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