

# Neighborhood Contextual Factors and Early-Starting Antisocial Pathways

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This paper examines research investigating the effects of neighborhood context on the onset and persistence of early-starting antisocial pathways across middle and late childhood. The review begins by presenting theory and research mapping the early-starting developmental pathway. Next, sociologically and psychologically based investigations linking neighborhood context and early antisocial behavior are examined, in order to posit and evaluate the effects of *community economic disadvantage*, *exposure to neighborhood violence*, and *involvement with neighborhood-based deviant peer groups* on the development of antisocial behavior. It is suggested that middle childhood may represent a critical developmental period during which children are at heightened risk for neighborhood-based effects on antisocial behavior problems. Key methodological issues are addressed, and recommendations for future research integrating developmental pathways and neighborhood theory and research are advanced.

**KEY WORDS:** antisocial behavior; neighborhood context; neighborhood peer groups; delinquency; middle childhood.

The importance of determining the effects of neighborhood contextual factors on antisocial behavioral (AB) outcomes in children and adolescents has long been acknowledged (Brooks-Gunn, Duncan, & Aber, 1997; Sampson & Groves, 1989; Shaw & McKay, 1942). Sociologists and criminologists have shown that the majority of juvenile crime occurs in densely populated urban neighborhoods, namely those nearest the city centers and those characterized by poverty, low economic opportunity, high residential mobility, physical deterioration, and disorganization (Shaw & McKay, 1942; Simcha-Fagan & Schwartz, 1986). This is especially true for the most violent crimes. Sickmund, Snyder, and Poe-Yamgata (1997) found that 25% of all known juvenile homicides were perpetrated within five major U.S. inner-city areas. Given the concentration of crime in the most dangerous and poor areas, it is crucial to understand effects

of neighborhood context on the development of children.

In a recent comprehensive review examining theoretical models of neighborhood effects on child and adolescent mental health outcomes, Leventhal and Brooks-Gunn (2000) argued that there is a need for integrating neighborhood research with specific developmental frameworks. The growth in research regarding *developmental pathways to antisocial behavior* over the past few decades offers such a structural framework for positing neighborhood effects. Developmental pathways research has established distinct patterns of AB, that appear to differ according to age of onset, gender, and other correlates, to have different antecedents, and to be related to the severity and chronicity of AB and criminal careers (Loeber, 1987; Moffitt, 1993b; Patterson, 1986).

Traditionally, when effects of neighborhoods have been considered in relation to developmental pathways, they are thought to be indirect, through effects on parenting during early childhood, and to become more direct, through exposure to deviant culture, in adolescence (Aber, 1994; Fraser, 1996; Leventhal & Brooks-Gunn, 2000). The role of

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neighborhoods in antisocial development during *middle childhood* is less clear. This is problematic, as middle childhood is the period during which children's trajectories toward or away from serious AB tend to diverge. Others have also noted an increase in direct exposure to neighborhood factors during middle childhood, including violence, crime (Loeber & Farrington, 1998; Miller, Wasserman, Neugebauer, Gorman-Smith, & Kamboukos, 1999; Osofsky, 1995), and direct contact with adult neighborhood members and peers (Cairns, Calwallader, Estell, & Neckerman, 1997; Dishion & McMahon, 1998). It is possible that neighborhood factors such as these may directly affect development of early-onset conduct problems in middle childhood, particularly in certain neighborhood contexts or under specific conditions (Aber, 1994; Wikstrom & Loeber, 1999).

Although there have been a few key investigations, the existing studies have not been brought together to evaluate established neighborhood effects on the onset of antisocial pathways across middle childhood (Brooks-Gunn, Duncan, Klebanov, & Sealander, 1993; Gephart, 1997). This paper seeks to fill this gap. Theory and research involving the early-starting developmental pathway to AB is first presented. Next, three neighborhood factors are implicated as key effects on developmental pathways to AB—community economic disadvantage, exposure to violence, and experience with neighborhood deviant peers. Issues regarding conceptualization and measurement of these variables are then addressed. Studies are reviewed to examine the ensuing questions: Do these neighborhood factors directly or indirectly affect the onset and development of early-starting pathways? If so, which community- and individual-level neighborhood factors are most relevant and under what conditions? What might we glean from these studies about potential mechanisms by which neighborhood affects early-starting AB?

## THEORY OF ANTISOCIAL PATHWAYS

### Theory of Antisocial Behavior: The Early-Starter Developmental Pathway

Children and adolescents' AB is an immense and costly social problem in today's society (Yoshikawa, 1994). The annual cost of AB is thought to exceed \$60 million (Roth & Moore, 1995). While a large proportion is committed by adults, about 1 in 5 violent crimes are committed by youth under the age of 18

(Fraser, 1996). Prevalence rates vary by age, gender, race, and the criterion of AB. Very young children seldom engage in violent crime. Loeber (1987) reported prevalence rates for parent- and child-reports of aggression ranging from 8 to 37% for 6–7-year-olds, and decreasing to 17–19% for 10–11-year-olds. Theft and the composite delinquency rates were low but stable, ranging from 1 to 10%. During preadolescence, rates of more serious AB increase. For example, Elliott (1994) reported that for violent offending, rates increased from 13 to 23% for European American (EA) males and from 11 to 36% for African American (AA) males from ages 12 to 17.

Given these alarming statistics, considerable research efforts have been garnered to determine the antecedents and course of AB. The data suggest that individual rates of aggression and AB show high stability over time (Elliott, 1994), are predictable, and follow an orderly progression from minor to more serious acts (Loeber, Green, Lahey, Christ, & Frick, 1992; Loeber, Wung, et al., 1993; Tremblay, Phil, Vitaro, & Dobkin, 1994), and can be reliably categorized into distinct behavioral pathways that lead to different outcomes (e.g., theft vs. violent crime; Farrington, 1983; Loeber et al., 1992). These pathways can be further distinguished by age of onset, types and progression of AB (Moffitt, 1993b), and are thought to differ by individual and family correlates, and by gender and ethnicity (Loeber, 1987; Nagin, Farrington, & Moffitt, 1995; Silverthorn & Frick, 1999). While there is debate about the patterns of behavior constituting specific pathways, nearly every antisocial theory discusses a high-risk, chronic pathway that begins in childhood (see Elliott, 1994; Farrington et al., 1990; Loeber, DeLamatre, Keenan, & Zhang, 1998; Moffitt, 1993b, for further review). It is clear that early-onset of serious AB (i.e., before age 12) marks a significant risk for crime in adulthood. Several longitudinal investigations have shown that these children tend to commit large numbers of antisocial acts (Farrington, 1983; Loeber, 1988; Tolan & Gorman-Smith, 1998), have a higher frequency and duration of official offending (Loeber & LeBlanc, 1990), and represent a large proportion of violent, career offenders (Farrington et al., 1990).

Some theories include a late-starting pathway that is marked by low levels of aggression in childhood, with large increases in serious AB in adolescence thought to be primarily driven by increased exposure to deviant peers (Moffitt, 1993a; Patterson, Reid, & Dishion, 1994). However, in recent investigations, there was no marked evidence for a group

of children with increasing levels of serious AB initiated in early adolescence that then desisted (Laird & Dodge, 1999; Nagin, Farrington, & Moffitt, 1995; Nagin & Tremblay, 1999). It appears that it would be most effective to conceptualize AB as initially developing on a continuum, with the key period of onset into diverging pathways leading to different outcomes occurring during middle childhood and early adolescence.

Early- and late-starting antisocial pathways are thought to be associated with different biological and environmental antecedents. Several reviews of proposed risk factors exist (see Farrington, 1987; Loeber & Dishion, 1983; Yoshikawa, 1994), so discussion here is brief and focuses on early-starting paths. Studies with behavior genetic designs have suggested that there may be a strong genetic component to early overt aggressive behavior, but weaker effects for early delinquent behavior (see Rowe, 1994, for review; Slutske et al., 1997). Others have demonstrated that examining additive effects and interactions between genetic and environmental factors (i.e., factors that affect the quality of parent-child relationship) go further in explaining AB than either factor alone (Pike et al., 1996; Reiss, Hetherington, et al., 1996). Meta-analyses have demonstrated that environmental factors play a significant role in AB (Yoshikawa, 1994). These include early child disruptive behavior (e.g., impulsivity, aggression), familial criminal activity, parenting problems (including poor supervision, harsh discipline), and factors associated with low SES (including welfare status, housing, and family size; Loeber & Dishion, 1983; Loeber & Stouthamer-Loeber, 1986). Criminologists and sociologists typically add community poverty, deviant peer group involvement, and availability of drugs and guns to this list (Sampson, 1993; Yoshikawa, 1994).

In terms of mechanisms, most researchers posit direct and interactive effects between individual- and family-level environmental risk factors on the early development of problem behavior. For example, Patterson et al. (1994) hypothesize that parental management strategies and child temperament interact to predict early-starting problem behavior, whereas Moffitt (1993a, 1993b; White, Moffitt, Earls, Robins, & Silva, 1990) suggests that early neuropsychological deficits in combination with an adverse child-rearing environment (e.g., low parental warmth) facilitates an antisocial course. Much empirical work supports the notion that individual- and family-level variables affect the development of antisocial outcomes, interactively and transactively (Loeber, Farrington,

Stouthamer-Loeber, Moffitt, & Caspi, 1998; Sameroff, Bartko, Baldwin, Baldwin, & Seifer, 1998). Community factors have been characterized as more distal, with less potential for affecting individual early-starting AB. Patterson and Moffitt have paid relatively less attention to contextual factors such as variations in neighborhood environments, typically grouping these effects with family SES factors; perhaps because of a restricted range of neighborhood contexts within their specific samples (Moffitt, 1993b; Patterson, Forgatch, Yoerger, & Stoolmiller, 1998). In more diverse, urban samples, Loeber and others demonstrated that neighborhood context may have distinct relations with AB, may interact with family- and individual-level factors, and may be important to examine from a pathways perspective (Aber, 1994; Loeber & Wikstrom, 1993; Tolan et al., 1995).

### **THEORY OF NEIGHBORHOOD FACTORS AND EFFECTS ON ANTISOCIAL BEHAVIOR**

Associations between neighborhood factors and child development have long been explored in sociological research (Fraser, 1996; Leventhal & Brooks-Gunn, 2000). Neighborhoods hold prime importance in families' lives as the context for socialization and social support (Coulton, 1997). The term "community" implies both a structural boundary and a social context. Ethnographic work has documented that families interact frequently with neighbors and neighborhood institutions, and this is where children receive social, health, and educational services, develop a sense of cultural practices, belonging, and safety, and learn about expectations of others (Bronfenbrenner, 1986; Burton & Price-Spratlen, 1999; Coulton, 1997; Furstenburg & Hughes, 1997). Indeed, neighborhoods of residence are "children's turf" in early and middle childhood (Bryant, 1985; Garbarino, 1982).

The contribution and experiences in the neighborhood context are likely to vary across individuals and developmental stage. For example, the conceptualization of neighborhood and the amount of contact are different for younger infants and toddlers than for older children, and different still for adolescents. When children are very young, their direct experiences of neighborhood factors are relatively infrequent and the space in which they conceive of neighborhood is small. Neighborhood effects on infants and toddlers are more likely to be mediated through their

effects on parents. At this point, given parents' greater mobility and range of experience, the potential effects of several neighborhoods (i.e., where a parent lives vs. the neighborhood in which s/he works) may be at play. However, as children grow older, their perception of and contact with neighborhood expands, and effects become more direct. For example, indirect neighborhood effects on IQ and early academic competence for early school-age children have been demonstrated to be primarily mediated by parenting factors, with more direct relations for pregnancy, school drop-out, and delinquent behavior during adolescence (Brooks-Gunn et al., 1993; Gephart, 1997). Moreover, the timing of this switch from less to more direct contact with community members and institutions varies with the characteristics of the community. That is, a child growing up in an isolated public housing project will have different experiences of community than a child who grows up on a rural farm. The perceived degree of social cohesion is likely to be very different in these two communities. Thus, children's development is affected both directly and indirectly by neighborhood factors, with complex and varying paths.

There are many theories proposed to account for the influence of neighborhood factors on AB that stem from work in sociology and criminology. These models are not developmentally specific, nor are they mutually exclusive. There is considerable overlap in the proposed processes. These models fall into four general areas: demographic and structural composition; social disorganization and poor social control; violence in the neighborhood; and parenting practices and social networks (see Coulton, 1997; Furstenberg & Hughes, 1997; Gephart, 1997; see also review by Leventhal & Brooks-Gunn, 2000).

### **Demographic and Structural Composition of the Neighborhood**

The first theory is composed of a set of hypotheses suggesting that the structural and experiential *composition of the neighborhood*, assessed by demographic variables such as ethnicity and income, affects AB through socialization processes relating to availability of role models and the relationships between majority and minority groups. These models stress the positive effects of having more affluent neighbors (Kupersmidt, Griesler, DeRosier, Patterson, & Davis, 1995) and negative effects of problematic racial relations within neighborhoods

(Jencks & Mayer, 1990; Ogbu, 1991). The latter condition is hypothesized to be even more pronounced in the poorest communities. Massey (1990) and colleagues (Massey & Denton, 1993; Massey, White, & Phua, 1996) have argued that urban housing policies contribute to greater concentrations of poverty within certain neighborhoods. The frequent placement of public housing in poor neighborhoods has led to isolated areas of concentrated poverty in the cities and to simultaneous growth in affluent communities outside of the cities (Massey et al., 1996). These policies have also facilitated greater racial and ethnic segregation of neighborhoods, as more minorities reside in poor urban neighborhoods (Leventhal & Brooks-Gunn, 2000). Moreover, they have contributed to the movement of many family-based resources and employment opportunities to outside of urban areas, as businesses follow white-collar workers into the suburbs (Wilson, 1987, 1996).

### **Neighborhood Social Disorganization and Social Control**

Closely related to this theory is a set of hypotheses involving the concepts of neighborhood *social disorganization and social control*. Neighborhoods characterized by economic decline, population turnover, and decreased family resources (e.g., many single-parent families) are posited to have low levels of both formal and informal control and poor collective efficacy (Sampson, Raudenbush, & Earls, 1997; Wilson, 1987). These communities have greater difficulty in maintaining economic institutions, such as stores, businesses, restaurants, and social institutions, such as community interest groups (Furstenberg, 1993). Recent studies of urban areas in Chicago have found that residents in more disorganized communities feel less positive and trusting toward neighbors, and report lower levels of neighborhood cohesion and supportive social networks (Sampson et al., 1997). Thus, community members are less likely to "look out for one another" and to come together to act against criminogenic activities (Furstenberg, 1993). These conditions are thought to allow for children and adolescents to have greater access to delinquent subculture (Sampson, 1997). Greater exposure to criminal activities coupled with a lack of cohesion regarding neighborhood values against crime may lead children to believe that AB is essentially acceptable, or that such behavior will not be readily met with sanctions.

### Violence in the Neighborhood

A third group of theories involves the effects of certain *stressors*, especially *exposure to violence*, experienced in the neighborhood environment (e.g., also victimization, poverty). Exposure to violence is hypothesized to affect children's AB through a number of processes: disrupting the development of empathy for others (Farrell & Bruce, 1997; Gorman-Smith & Tolan, 1998; Osofsky, 1995), increasing anger and frustration at the lack of control over stressful events (Attar, Guerra, & Tolan, 1994), teaching new aggressive/violent behaviors (Bandura, 1986), accepting aggression as a standard problem-solving skill (Kotlowitz, 1991; Lorion & Saltzman, 1993; cited in Farrell & Bruce, 1997), weakening disinhibition of violent responses (Farrell & Bruce, 1997), and promoting generalized desensitization to the consequences of AB (Garbarino, Kostelny, & Dubrow, 1991). Again, public housing is thought to relate to increased stress within communities, as a context where witnessing violence is a more common occurrence. Traditionally, housing projects have often been placed where there were either natural or man-made boundaries (e.g., on a hill, fenced in, or gated). Also, for largely economic reasons, the housing units have often been multiunit, closely placed buildings with little open space, resulting in crowding and increasing tension (Coulton & Pandey, 1992; Stark, 1987). These closed communities also tend to create space that is susceptible to victimization and crime (Dubrow & Garbarino, 1989).

### Parenting Practices and Neighborhood Social Networks

The final model emphasizes the effects of neighborhood social networks, resources, and institutions on *parenting* styles, which in turn are hypothesized to influence child development through increasing involvement with *deviant peer groups*. Furstenberg (1993) and Garbarino and Kostelny (1993) have discussed how in dangerous, isolated, or disorganized neighborhoods, parents may develop greater levels of frustration and harsher styles of discipline that have unintended negative consequences for child AB. Social learning theorists posit that low warmth and punitive discipline negatively reinforce children's escalating aggressive behaviors (i.e., "the coercive cycle"; Patterson et al., 1994). These parents may also be less able to provide positive opportunities for children (e.g., sports organizations, clubs) and to

monitor their children's activities outside of the home environment (Dishion & McMahon, 1998), leaving them vulnerable to deviant peer group influences in the neighborhood.

### Neighborhood Context and AB: Recent Perspectives on Onset Timing and Mechanisms of Effect

The models presented above are not developmentally specific; they tend to not consider that the influence of neighborhoods might vary as a function of children's age. Over the last few decades, researchers from criminological and developmental areas have been attempting to integrate and test these theories of neighborhood effects and discuss them in relation to developmental pathways of AB.

#### *One Potential Theoretical Developmental Framework*

Figure 1 depicts a hypothesized developmental framework that considers the mechanisms by which neighborhood contextual factors influence AB. Three neighborhood factors are hypothesized to be particularly associated with the onset and development of more serious AB. Variables associated with community-level disadvantage are posited to directly and indirectly affect development throughout early childhood. Neighborhood contextual factors are expected to play a greater role as a function of children's increasing age, as children experience more independence and mobility (Steinberg & Silverberg, 1986) and a corresponding decrease in parental monitoring (Dishion & McMahon, 1998). Neighborhood factors such as exposure to crime and presence of deviant role models become more salient. In poor and dangerous neighborhoods, children are likely to be exposed to greater levels of violence and have first-hand experience with older, more deviant peers (Dishion & Patterson, 1997; Gonzales, Cauce, Friedman, & Mason, 1996). In addition, perhaps within certain neighborhood contexts (i.e., high-risk, urban environments), this may occur at a younger age than posited in existing theories and research. Exposure to these contexts in turn facilitate children's entry into an early-onset antisocial trajectory.

Sampson (1993) has proposed a community-level theory that integrates elements of theoretical perspectives of neighborhood effects with child development that is consistent with the proposed developmental framework. He posits that features associated with disadvantaged communities, such as residential

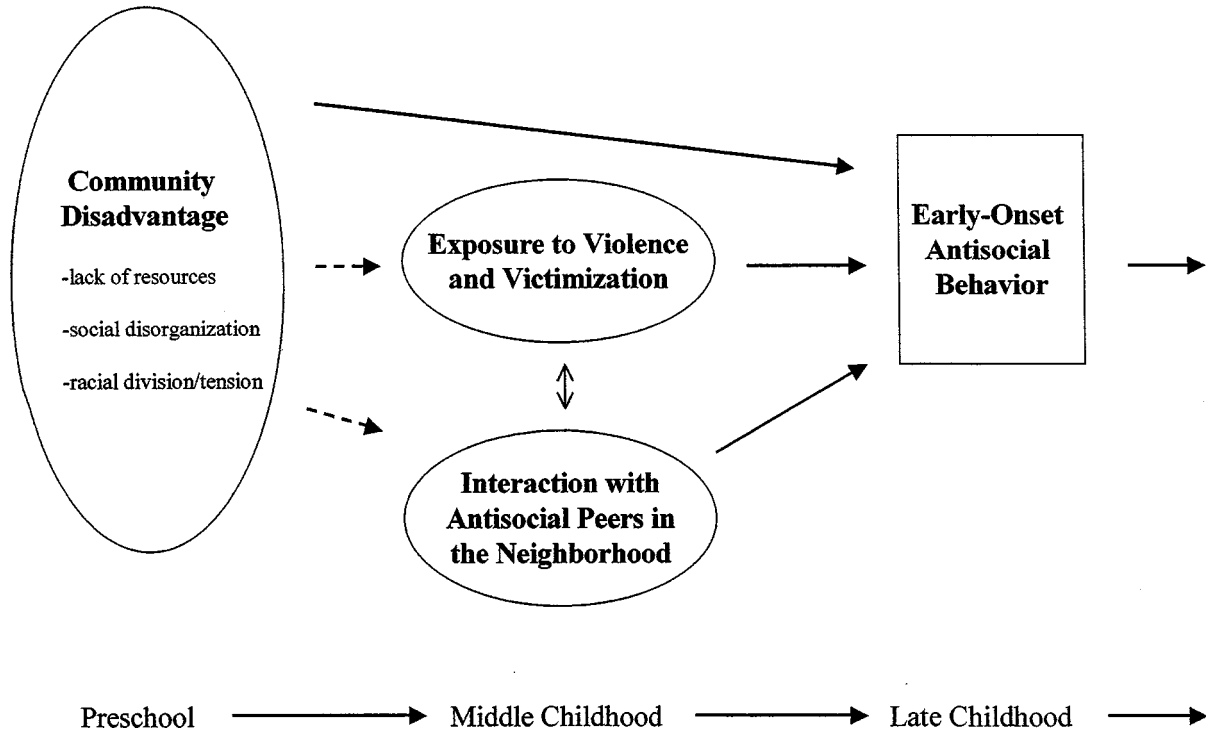


Fig. 1. General developmental framework describing the potential neighborhood factors that affect onset and progression of early antisocial behavior.

mobility, population heterogeneity and high density, concentration of impoverished families, and lack of institutional resources, affect children and families through their mediating effects on community-level processes. These processes focus on the social connectedness and interaction between neighborhood institutions and networks, children, and families. For example, Sampson and others (Gephart, 1997; Sampson, 1993; Shaw & McKay, 1942; Wilson, 1987) discuss how residential instability and social disorganization lead to decreasing social supports for families and lower levels of collective monitoring of neighborhood antisocial peer groups. In addition, ethnic and socioeconomic heterogeneity within neighborhoods may lead to social comparison processes and increased tension and competition for resources if families and youths perceive that opportunities are blocked for them and not for others (Jencks & Mayer, 1990). These structural and experiential neighborhood-based processes leave certain contexts vulnerable to increased crime. Thus, children growing up in these types of environments are at heightened risk for exposure to violence and deviant peer activities.

Exposure to violence (ETV) in neighborhoods has been demonstrated to be related to children's

subsequent AB in studies of early childhood and adolescence (Gonzales et al., 1996; Osofsky, 1995; Sampson, 1997), and more recently, middle childhood. Children between the ages of 6 and 14 have reported high rates of ETV in several investigations using urban samples (Esbensen & Huizinga, 1991; Lynch & Cicchetti, 1998; Miller et al., 1999). These authors and others have speculated that in addition to modeling aggression and crime, witnessing chronic neighborhood violence during middle childhood may increase stress, frustration, and anger, which in turn promotes the learning and use of aggressive problem-solving strategies and AB. Likewise, personal victimization rates have been linked to neighborhood contextual factors and to offending (Rivera & Widom, 1990; Sampson, 1985). Individuals living in criminogenic environments (e.g., urban, poor, and isolated communities) are at higher risk for being targets of crime, and individuals who are victims of crime tend also to engage in higher rates of AB (Esbensen & Huizinga, 1991; Rivera & Widom, 1990). Research on child maltreatment shows that rates are highest in neighborhoods characterized by severe poverty and disorganization even after controlling for family-level characteristics (see Aber, 1994; Coulton,

Korbin, Su, & Chow, 1995; Lynch & Cicchetti, 1998, for reviews). Similar findings emerge for children's self-reports of victimization (Esbensen & Huizinga, 1991; Selner-O'Hagan, Kindlon, Buka, Raudenbush, & Earls, 1998). Some researchers have suggested that parental monitoring may moderate children's ETV (Dishion & McMahon, 1998). However, within certain environmental contexts, it may be that children's ETV often occurs in the presence of caregivers (e.g., at the bus-stop, in community centers or commercial spaces), and thus could be unrelated to monitoring but still related to the initiation and onset of early problems (Dubrow & Garbarino, 1989; Garbarino & Kostelny, 1993; Furstenburg, 1993).

The role of deviant peers in the development of early-onset AB appears to be complex. Peer delinquency is clearly a correlate; it is a robust predictor of children's concurrent and later delinquency (Dishion, Andrews, & Crosby, 1995; Loeber et al., 1998), even after accounting for other individual and family factors. Children often commit violence with their peers. As such, involvement with deviant peers is a central component in many theories of AB. But debate exists regarding the temporal and potentially causal role of peers. That is, is involvement with deviant peers merely a correlate of AB (e.g., a result of children's niche picking, Cairns & Cairns, 1991; Kandel, Davies, & Baydar, 1990), or could it be a causal influence, such that peer deviance is an antecedent and necessary step to the development of antisocial outcomes (Keenan, Loeber, Zhang, Stouthamer-Loeber, & VanKammen, 1995)?

This question of the timing of peer influence on AB is highlighted when attempting to integrate various neighborhood literatures. In sociologically based work, peer behavior is more often placed in the "neighborhood risk" category, and is seen as a potential antecedent to serious AB. The presence of deviant peer groups or gangs is hypothesized to affect children through multiple processes, perhaps by increasing their chances of belonging to such a group (i.e., restricted friendship choice or peer pressure), modeling the acceptance of deviant attitudes and actions (Cairns et al., 1997; Jencks & Mayer, 1990), or by modeling increased economic or social opportunities associated with criminal activities (Huff, 1996; Sampson, 1993, 1997; Wilson, 1987). Therefore, in these studies, peer deviancy is typically assessed by inquiring about either presence of or involvement with antisocial peer groups, in both neighborhood and school settings. In contrast, developmentally based research has focused on the phenomenon

of peer rejection in early childhood. Early AB (facilitated by early family factors) is posited to lead to peer rejection, which in turn leads to the formation of peer groups with other rejected antisocial children, with whom they continue to perform deviant acts (Patterson, 1986). Given the emphasis on peer status, assessment typically consists of classroom-based sociometrics. This may be one path by which children come to associate with deviant peers (see Coie, Dodge, & Kupersmidt, 1990; Parker, Rubin, Price, & DeRosier, 1995). Yet, it is not the only path, as children who are antisocial are often not rejected. Aggressive children have been shown to be part of, and are sometimes identified as popular leading members of school-based groups (Bierman & Wargo, 1995). Also, the concept of social status within neighborhood-based groups has not been applied to theory regarding neighborhood effects on AB.

Peer delinquency may be more strongly related to early-starting antisocial pathways than previously hypothesized, particularly when neighborhood contextual factors are also considered. First, peer AB has been found to be highly associated with antisocial development, extending downward into middle childhood, particularly when children are asked to report on their peer group activities (Keenan et al., 1995). Second, earlier developmental research had tended to overemphasize the effects of same-age, school-based relationships and underemphasize the potential effects of neighborhood-based peer groups. Ethnographic methods have shown that children spend a great deal of time with neighborhood peers ranging widely in age in middle childhood (Burton & Price-Splaten, 1997) and are exposed to aggressive peers most frequently in the neighborhood setting (Sinclair, Pettit, Hartist, Dodge, & Bates, 1994). Moreover, there is relatively little overlap between the peers children interact with in their classrooms and in their neighborhood (Dishion et al., 1995; Ingoldsby, Shaw, Flanagan, & Nordenberg, 1999). Thus, developmental and sociological researchers have often focused on different groups with social influences on children; integration of research may lead to significant advances in the identification of early-onset pathways. Third, there is some evidence that children's primary peer groups may differ across dissimilar neighborhood contexts, or vary in relation to certain neighborhood factors (Kupersmidt et al., 1995). For example, desegregation policies in school districts, which are often associated with poverty rates and ethnicity patterns in communities, may lead to children being bussed to far-away schools, and thus,

these children might spend more time with neighborhood peers. If these neighborhood peer groups contain older members who “train” younger members in AB (Patterson et al., 1994), peer deviancy may be a significant neighborhood contextual risk factor relating to early onset AB (Pettit, Bates, Dodge, & Meece, 1999). Fourth, exposure to neighborhood violence and deviant behavior may be facilitated by children’s relationships with siblings, particularly older siblings. If a child’s older sibling engages in AB and is involved with deviant peers in the neighborhood, the child may model antisocial activities through shared friendship networks (Bank, Patterson, & Reid, 1996; Ingoldsby, Shaw, & Garcia, 2001; Patterson, 1984; Rowe & Gulley, 1992; Slomkowski, Cohen, & Brook, 1997). Thus, older delinquent siblings may be a conduit through which neighborhood-based antisocial values are imported into the family context, which in turn facilitates younger children’s entry into early-starting delinquent behavior.

## CONCEPTUAL AND METHODOLOGICAL ISSUES

### Neighborhood Context

Before examining the particular studies of neighborhood context and child AB, some important issues need to be addressed. The diversity of theoretical and empirical approaches to neighborhood effects poses significant challenges (see Leventhal & Brooks-Gunn, 2000, for a comprehensive review). First, the concept and construct of neighborhood has varying meanings to individuals. If one were to ask two individuals who live next door to one another, “where and what is your neighborhood or community?” one might get very different answers. Thus, neighborhood factors can be defined and assessed in different ways. For example, neighborhood factors can be defined in terms of structural dimensions (e.g., city block; census tract) or experiential/social dimensions (e.g., neighborhood danger, social networks, degree of cohesion regarding values; Coulton, 1997; Seidman et al., 1998). Also, they can be conceived of at the community (i.e., aggregated data across all neighborhood members) or individual level (e.g., self-reports). Although community-level effects are essentially the sum of individual effects, there are problems with making individual-level inferences from ecological data, due to nonindependence of observations for those living in the same communities (Aber, 1994; Gold, 1987).

Relations with AB are likely to be different depending upon the unit and level of measurement, making drawing conclusions difficult. For example, census tracts, a common measure, are composed of larger areas than those indicated by self-reports of perceived neighborhoods (Coulton, 1997). Thus, studies using these measurements may be describing different process variables (Burton & Price-Spratlen, 1999).

Moreover, neighborhood factors are often interrelated, as well as with other family and individual factors. Isolating specific effects of neighborhood are difficult (Brooks-Gunn et al., 1997; Farrington, 1993). For example, neighborhood SES has been shown to be correlated with dangerousness and housing structure (Wikstrom & Loeber, 1999), social disorganization (Simcha-Fagan & Schwartz, 1986), family-level SES (Brooks-Gunn et al., 1997), and parenting (Simons, Johnson, Beaman, Conger, & Whitbeck, 1996). It is likely that some individual and family effects may actually represent, overlap, or interact with neighborhood-based factors. To wit, some studies have been plagued by drawing conclusions about neighborhood context based on measurements of family-level SES (Tittle & Meier, 1990).

*Selection bias* is also a major concern. To some extent, families choose their neighborhoods and their length of residence. These choices are likely based upon several factors, including shared values (e.g., parenting values), comfort with characteristics of their neighbors (e.g., ethnicity), safety of the environment, and affordability (Coulton, 1997; Tienda, 1991). Thus, families who move in and out of neighborhoods may differ on key characteristics related to the development of AB (Tienda, 1991). This also confuses the determination of the direction of neighborhood effects. For example, it is difficult to assess whether neighborhoods with poor collective efficacy have “caused” unproductive modes of parenting, or those with similar ways of parenting congregate in disorganized areas? There are challenges in measuring the impact of selection effects in existing research. Some recent studies have begun to develop strategies to assess this issue (Ensminger, Lamkin, & Jacobsen, 1996; Manski, 1993). Winslow (2001) examined child, family, and neighborhood factors that predict whether families move in and out of different types of neighborhoods. Among low-income families, those with minority status, parental criminality, and maternal depression were less likely to move into better and safer neighborhoods. When controlling for these variables, neighborhood context still contributed to the prediction of AB, suggesting that selection

effects may not play a large role in the development of AB.

Although these methodological issues seem extremely challenging, investigations that incorporate multilevel factors accounting for the influence of neighborhood, family, and individual risk factors provide the strongest test of neighborhood effects (Bottoms, 1993). Newer analytic strategies, such as hierarchical linear modeling (HLM), that allow for the nesting of individuals within groups (i.e., communities) and that can examine varying levels of effects, are well-suited to these types of questions. However, as will be evidenced by the review of studies below, there is a paucity of well-designed investigations (Leventhal & Brooks-Gunn, 2000).

### Antisocial Behavior

As with neighborhood factors, the approaches used to conceptualize and measure AB are diverse. As good reviews of the strengths and limitations of research on AB exist (see Kazdin, 1987; Loeber & LeBlanc, 1990), only a few relevant issues are highlighted. Middle childhood spans many years and involves significant developmental changes. AB during this period has been described in terms of externalizing problems, aggression, conduct disorder, juvenile delinquency, and gang involvement—using various broadly- or narrowly defined measurements of these constructs. These constructs generally overlap but are not the same (e.g., conduct disorder is a psychiatric definition whereas delinquency is a legal one; Yoshikawa, 1994). Informants of behavior vary; some studies assess official crime ratings or other “objective” measures, whereas others collect self-reports, making comparisons a difficult task.

Another major issue relates directly to the study of developmental pathways. Loeber, Stouthamer-Loeber, van Kammen, and Farrington (1991) and others (Elliott, 1994; Farrington et al., 1990) have discussed that it is important to assess many specific characteristics of AB (e.g., age of onset, severity, type) to determine pathways. However, most investigations examine only frequency of behavior, using general or composite measures over a few years at most. Rarely do researchers establish the age at which behavior begins, or distinguish more serious AB from more normative types. Also, some studies utilize samples that vary widely in age and utilize cross-sectional designs. These problems tend to limit the types of questions that can be answered regarding the *developmental* course of antisocial problems.

### Gender

Pathways to AB are hypothesized to vary by gender across middle childhood (Loeber et al., 1998; Silverthorn & Frick, 1999). Girls exhibit much lower rates of overt AB than boys (i.e., 1:4 ratio; Fraser, 1996). Few studies of serious AB involve female samples. However, it appears that girls who do engage in early AB follow a similar progression from minor to serious behavior, and established individual and family predictors are also applicable (Keenan & Shaw, 1997). Recently, Silverthorn and Frick (1999) hypothesized that girls with serious antisocial outcomes may fit a *delayed-onset* pattern. Thus, although antisocial girls share similar background characteristics with early-onset boys, girls’ onset will occur more frequently after middle childhood, and may be triggered by changes related to biological maturation and social milieu. There has been little theoretical discussion of potential neighborhood contextual effects specifically on girls’ AB. In middle childhood, boys appear to have more direct access to neighborhoods (Furstenberg & Hughes, 1997) and are more frequently exposed to and victimized by aggression and violence in the neighborhood (Esbensen & Huizinga, 1991; Schwab-Stone et al., 1995; Selner-O’Hagan et al., 1998). Thus, it may be that girls’ greater opportunities for exposure to neighborhoods at early adolescence is a mitigating factor in their typically later onset of serious AB. Thus, neighborhood factors may help to explain both boys’ earlier onset and girls’ lower rates of early onset, as perhaps young girls are “protected” from exposure to neighborhood influences. More research on AB in girls, in relation to neighborhood influences, is currently needed (Farrell & Bruce, 1997; Loeber et al., 1998).

### Ethnicity

One of the most serious issues relating to neighborhood and AB pertains to ethnicity (see Hawkins, Laub, & Lauritsen, 1998, for review). Differences in offending rates among various ethnic groups are marked (Elliott, 1994; Elliott & Ageton, 1980). Most research has focused on differences across AA and EA groups; work with other ethnic groups is seriously lacking. Although prevalence rates across ethnic groups vary by type of AB, generally rates are higher among AA boys. Some evidence shows that AA boys may experience earlier onsets of serious AB than EA boys (Farrington, Loeber, Stouthamer-Loeber, & van Kammen, 1996, see Fig. 2), leading some to

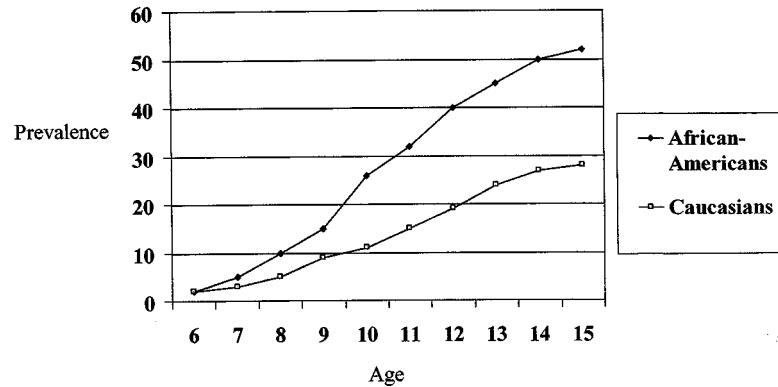


Fig. 2. Cumulative age of onset, serious delinquency, Pittsburgh Youth Study (Farrington, Loeber, Stouthamer-Loeber, & van Kammen, 1996).

discuss the potential “risk” associated with being AA (Wilson, 1987). This notion has also resulted from studies reporting higher crime rates within inner-city neighborhoods largely populated by AA families (Hawkins et al., 1998).

However, many problems with this interpretation are noted. First, relations between ethnicity, race, and violence have been greatly confounded by community context. Simply put, within most poverty-stricken neighborhoods, the proportion of resident African Americans is generally much higher than that of European Americans (Duncan, Connell, & Klebanov, 1997). Moreover, Sampson (1993), citing Wilson (1987), discussed how “regardless of a Black’s individual-level, family, or economic situation, the average community of residence differs dramatically from that of a similarly situated White. Therefore the relationship between race and violence may be largely accounted for by community context” (p. 277). The effects of ethnicity in explaining AB and crime are greatly attenuated once effects for other contextual factors are accounted (McLoyd, 1990; Sampson, 1993; Stark, 1987). Peebles and Loeber (1994) found that when AA boys did not live in poor neighborhoods, their level of delinquent behavior was similar to EA boys. Thus, the shift in the age-of-onset curves toward earlier onset for AA boys seen in Fig. 2 may be partially due to greater exposure to neighborhood poverty, violence, and deviant peer groups. Of note is the increasing divergence of prevalence rates between EA and AA boys across 10–12 years, which coincides with the timing of increased interaction with neighborhood members and institutions. There may be ethnic differences that facilitate or decrease risk, such as different cultural values and beliefs associated

with AB (Jagers, 1996) or ethnic differences in peer influence (Kingery, Biafora, & Zimmerman, 1996; Steinberg, Dornbusch, & Brown, 1990). Alternatively, it may be that ethnicity and neighborhood factors are interactively affecting AB (Sampson et al., 1997). These potential effects are not usually assessed and are difficult to disentangle (Aber, 1994; Loeber et al., 1998; McLoyd, 1990).

## REVIEW OF EMPIRICAL LITERATURE

Significant theoretical arguments have been presented to demonstrate that neighborhood contextual factors, such as poverty and exposure to violence, may play a consequential role in the onset and course of early-starting AB. This empirical review examines the question: Is there evidence for direct, indirect, or interactive effects of neighborhood factors on AB in middle to late childhood, and in particular, for early-starting pathways to serious AB? Studies were included if (a) they measured neighborhood factors assessing more than just aggregate income; (b) they assessed a developmentally appropriate dimension of AB; and (c) the age range of participants included a large proportion of children in middle to late childhood. Empirical works with drug use or gang violence as the primary outcome measures, or those studying conditions that were comorbid with AB, were excluded to evaluate the relevance of the posited theoretical developmental framework. Studies are presented in the tables according to age range of the sample (from youngest to oldest) to facilitate detection of any developmental patterns of neighborhood effects.

**Community-Level Measurements of Neighborhood Factors and Early-Onset Antisocial Pathways**

It is necessary to state at the outset that only a few studies have directly examined community-level measurements of neighborhood factors in relation to the onset and progression of early-starting antisocial pathways across middle childhood. These studies are listed in Table I.

Two studies from Loeber and colleagues classified Pittsburgh neighborhoods according to nine census variables along two dimensions, SES and Familism, and assigned participants to their respective residence groupings. In the first investigation (Loeber & Wikstrom, 1993), boys in low SES contexts had highest rates of delinquency compared to boys living in higher SES neighborhoods. They also found that neighborhood SES type was significantly related to rates and progression into both overt and covert antisocial pathways, and relations were similar across the two pathways. In low SES areas, more boys had

earlier onsets of more serious behavior, and had advanced to higher developmental steps in either antisocial pathway. In addition, by dividing areas into city-center and outer-city center groups, they found that the low SES inner-city neighborhoods had more boys involved in more serious steps of pathways. Relations were stronger for the younger sample, aged 10–13 years at initial assessment. They noted that the age of onset findings (i.e., more serious delinquency in higher SES areas was later than for low SES) indicated a direct effect of neighborhood context on early-starting paths.

The second investigation (Wikstrom & Loeber, 1999) included individual- and family-level risks and protective factors and distinguished between children with early- and later-onset of serious AB. Neighborhoods were again divided by SES, and further divided by concentrations of public housing. The risk and protective factors included hyperactive (HIA) problems, lack of guilt, poor parental supervision, low school motivation, peer delinquency, and positive attitude

**Table I.** Relations Between Neighborhood Factors and Early-Starting Antisocial Pathways During Middle-to-Late Childhood

Investigator(s)	Data set and sample	Neighborhood level and variables	Outcome/level	Results
Loeber & Wikstrom (1993)	Pittsburgh Youth Study Middle sample, n = 508 10–13 y.o. boys Older sample, n = 506 13–16 y.o. boys Approx. 50% AA, 50% EA 3 year longitudinal	Census tract NBH SES NBH familism	Individual Overt & covert delinquency	Low NBH SES (+) overt and covert delinquency Further progression into pathways Low NBH familism (+) covert behavior (older sample) Findings hold better for middle sample and inner-city low SES NBHs
Wikstrom & Loeber (1999)	Pittsburgh Youth Study N = 890 Middle sample Older sample 53% AA, 44% EA 3 year longitudinal	Census tract & individual SES-NBH contexts High SES, middle SES Low SES/PH Low SES/Non-PH	Individual AB & delinquency Self-report Parent-report Seriousness AOO of serious delinquency	Low SES/public housing (+) Prevalence of offending (–) Cumulative “protective” scores (+) Seriousness of offense Early onset (<12 yr.) more common Increase # of late-onset (3× as great) No direct effect of NBH-SES context on early-starting delinquency Direct effect of NBH-SES context on late-starting delinquency for those with higher or balanced protective scores

Note. NBH = neighborhood; SES = socioeconomic status; PH = public housing; AB = antisocial behavior; AA = African American; EA = European American.

toward AB. First, they found the prevalence of serious delinquency (including both overt and covert acts) was two times higher in the Low SES/Public Housing neighborhood context than in the High SES areas. Both early and late onsets (set as > age 12) were more common in the more disadvantaged neighborhoods. Next, they demonstrated that the six individual characteristics were also related to prevalence of serious delinquency. The individual factors better predicted onset timing than neighborhood context; early onset was most associated with having delinquent peers and high guilt. Furthermore, the relationship between the individual risk and protective scores and serious AB were different across neighborhood SES contexts. For those having a high number of risk factors, neighborhood SES did not have a direct effect on prevalence of serious AB. For those with a more balanced score of risk/protective factors, or high numbers of protective factors, context did affect serious offending. If they also lived in a poor neighborhood with public housing, they were twice as likely to have committed serious delinquent acts than those living in High SES areas. For boys living in Low SES/Public Housing context, differences were not significant for AB across risk and protective groups (all were relatively high), indicating a main effect for Public Housing. In terms of early-onset delinquency, when risk/protective index scores were considered, there was no significant variation across neighborhoods. However, for late-onset AB, for those with higher protective or balanced scores, prevalence was higher in poorer and more dangerous neighborhoods.

Together, these findings suggest neighborhood effects in relation to AB pathways. First, specific elements relating to the onset of AB appear to vary by neighborhood-SES context. Second, neighborhood SES appears to make strong contributions. Third, there are increased risks for the progression into serious AB for those living in inner-city, commercial areas. Finally, it seems that neighborhood-SES context primarily impacts the rate of late onsets in middle-to lower-risk boys when considering other individual predictors, but that early-onset delinquency appears to be affected by individual characteristics (i.e., no direct effect of neighborhood context). Results support the idea that for early-starters, the individual and family risks are already so high and their effects on AB are so strong that the risk of living in high poverty areas or public housing does not appear to add to the explanation of early-starting AB.

However, there are some alternate interpretations that may counter the conclusion that early-onset

AB is not directly affected by neighborhood factors. First, the ages of onset of behaviors prior to age 10 and 13 were assessed using retrospective reporting, and thus recall biases may be occurring. Loeber's and colleagues use of census-defined neighborhood boundaries results in a more comprehensive construct than that of many other data sets. However, it may be that there are differences in SES conditions *within* neighborhoods not reflected in this methodology (Aber, 1994). Neighborhood-SES context was measured at one time point. Thus, it is unknown whether neighborhood change or length of residence within the neighborhood affects early-starting pathways. That is, perhaps moving into a more dangerous area facilitates children's onsets of serious AB, or rates of increase. Also, it is unclear whether individual or family risk factors preceded the effects of neighborhood risks. Additionally, the emphasis of their measurement of neighborhood context was predominantly on SES and structural variables. Although they reported that the perceived neighborhood dangerousness measure supported the neighborhood-SES context distinctions, this variable was not used as a separate predictor of pathways. It is likely that there are differences in perception of, and exposure to, danger across neighborhoods that may be related to the development of different aspects of AB (e.g., property crime vs. violence; Miller et al., 1999).

### **Community-Level Measurements of Neighborhood Factors and Antisocial Behavior Outcomes**

Table II lists the other studies exploring relations between neighborhood factors assessed at the community-level and individual antisocial outcomes in middle-to-late childhood. Most studies of community-level neighborhood effects were not designed to address neighborhood effects on the onset and progression of early-starting antisocial pathways due to confounds already discussed (e.g., developmental designs, focus on aggression rather than pathway variables). One of the greatest problems is that these investigators have yet to follow their samples through adolescence and early adulthood, and are thus unable to delineate a group of "true" early-starters. In addition, they measure neighborhood factors at only one time point. These limitations curtail the ability to draw conclusions about the question at hand (Coulton, 1997; Furstenburg & Hughes, 1997). Nonetheless, relevant results are discussed.

A few neighborhood factors operating at the community level have been shown to be related to

**Table II.** Relations Between Community-Level Neighborhood Factors and Antisocial Behavior During Middle-to-Late Childhood

Investigator(s)	Data set and sample	Neighborhood level and variables	Outcome/level	Results
Kellam, Ling, Merisca, Brown, & Ialongo (1998)	<i>N</i> = 680, 6–11-year-olds Control group only, overselected for diverse SES/ethnicity urban groups 49% boys, 51% girls 64% AA, 29% EA 6 year longitudinal	<i>Census tract &amp; school-level data</i> School (NBH) poverty % free lunch	<i>Individual</i>	For boys and girls: school poverty at age 6 predicted aggression at age 12, above that accounted for by individual poverty, initial aggression, and all interaction terms No significant interactions with poverty
Kupersmidt, Griesler, de Rosier, Patterson, & Davis (1995)	<i>N</i> = 1271, 8–11-year-olds 762 EA, 509 AA 656 girls, 615 boys Cross-sectional	<i>Census tract</i> NBH SES % free lunch % subsidized housing	<i>Individual</i> Aggression Peer-report Teacher-report	No direct effect of NBH-SES context on frequency of aggression Low NBH SES (+) aggression for AA kids from low-income, single-parent homes Free lunch status (+) peer-report aggression ( <i>r</i> = .15) only for EA children In regression analyses: NBH % free lunch adds unique variance directly and interactively with individual free lunch status to predict aggression (controlling for grade and individual status) for both EA and AA groups
Guerra, Huesmann, Tolan, Van Acker, & Eron (1995)	<i>N</i> = 1935, 8–13-year-olds 49% boys, 51% girls 45% AA, 36% Latino, 18% EA 2 year longitudinal	<i>Census tract, school, &amp; individual</i> NBH-SES context % free lunch Family income	<i>Individual</i> Aggression Peer-nominated Teacher-report	NBH direct effects not assessed Low danger × low supervision/monitoring (+) high acting out behaviors
Coley & Hoffman (1996)	<i>N</i> = 355, 9–10-year-olds Working class/poor NBH 76% EA, 24% AA 49% boys, 51% girls	<i>Census tract</i> NBH dangerousness Police records of crime	<i>Individual</i> Acting out behaviors Teacher-report	NBH direct effects not assessed Low danger × low supervision/monitoring (+) high acting out behaviors
Beale-Specer, Cole, Jones, & Swanson (1997)	2 samples 1. Subset of Adolescent Pathways Project (APP) (NYC/B/DC) <i>N</i> = 360 AA, 10–16 years 129 boys, 166 girls 2. Subset of Promotion of Academic Competence Project (PAC) (Atlanta) <i>N</i> = 531 AA, 11–16 years 368 boys, 163 girls Cross-sectional	<i>Census tract &amp; individual</i> NBH risk (composite) Low SES Low % of high SES residents High male unemployment NBH process NBH hassles Social support NBH cohesion Negative life events NBH dangerousness	<i>Individual</i> NYC/B/DC Externalizing problems Delinquency/drug use Atlanta Externalizing problems	Both samples: No direct effects of composite NBH risk on externalizing problems, controlling for gender, family poverty Significant differences in correlations between NBH process variables and externalizing problems in low-risk vs. high-risk NBHs NYC/B/DC sample Negative life events for girls ( <i>r</i> = -.35 vs. -.19) Negative life events for boys ( <i>r</i> = -.31 vs. -.27) Atlanta sample Negative life events for girls ( <i>r</i> = -.38 vs. -.20) Social support in NBH for boys ( <i>r</i> = .24 vs. -.13)
Beale-Spencer, McDermott, Burton, & Kochman (1997)	Subset of PAC (Atlanta) sample (see above) 10–16-year-olds Cross-sectional	<i>Census tract &amp; individual</i> NBH risk composite (see above) NBH Assessment of Community Characteristics (NACC)-72 NBH vars crime statistics/police recs	<i>Individual</i> Externalizing problems Self-report Teacher-report	No direct effects of NBH risk or NACC variables on externalizing problems, even when controlling for family SES
Aber (1994)	Subset of APP (NYC/B/DC) of initial <i>N</i> = 1333 65% 5–6 grade 38% Latino, 27% AA, 23% EA Cross-sectional	<i>Census tract &amp; individual</i> NBH poverty NBH rate of single-parent underemployed families NBH negative life events	<i>Individual</i> Antisocial behavior Self-report Parent-report	No direct effects of NBH poverty, negative life events, or rates of single-parent/unemployed variables on AB, controlling for ethnicity, gender, family poverty, and family structure No interactive effects between ethnicity and NBH factors Concentration of dense household in NBH (+) AB (controlling for other factors, only for younger sample)

(Continued)

Table II. (Continued)

Investigator(s)	Data set and sample	Neighborhood level and variables	Outcome/level	Results
Seidman, Yoshikawa, Roberts, Chesir-Teran, Allen, Friedman, & Aber (1998)	Subset of APP 1. NYC/B/DC <i>N</i> = 1,157, 10–18-year-olds 60% girls 36% Latino, 29% AA, 24% EA 2. NYC only <i>N</i> = 754, 10–17-year-olds 61% girls 40% Latino, 21% AA, 28% EA Cross-sectional	<i>Census tract &amp; individual</i> Structural NBH risk NBH poverty NBH homicide rates Experiential NBH variables NBH daily hassles NBH involvement NBH cohesion	<i>Individual</i> Antisocial behavior Self-report composite of delinquency, alcohol use, involvement w/peers	Cluster analysis resulted in 6 NBH profile types Direct effects for NBH structural and experiential risk when entered after control variables (gender, ethnicity, family SES, conformity to prosocial/antisocial peer values) Moderate NBH risk (+) higher AB Interaction effect of NBH structural risk × cohort (effect stronger for older) Small ethnicity differences in self-perceived ratings of NBH experience
Loeber & Wikstrom (1993)	Pittsburgh Youth Study Middle sample, <i>n</i> = 508, 10–13-year-olds Older sample, <i>n</i> = 506, 13–16-year-olds 50% AA, 50% EA 3 year longitudinal	<i>Census tract</i> NBH SES NBH familism	<i>Individual</i> Covert and overt delinquency	Low NBH SES (+) overt and covert delinquency Low NBH familism (+) covert delinquency for older Significant NBH SES × Delinquency findings Findings hold better for middle sample and inner-city low SES NBHs
Maguin, Hawkins, Catalano, Hill, Abbott, & Herrenhohl (1995)	Seattle Social Development Panel Study <i>N</i> = 731, 10–18-year-olds Longitudinal	<i>Census tract &amp; individual</i> NBH attachment NBH disorganization NBH economic deprivation NBH availability of drugs Rates of adult crime	<i>Individual</i> Violence self-report	Violence at age 18 (+) low NBH attachment at age 10 ( <i>r</i> = .09) (+) NBH disorganization at age 14 ( <i>r</i> = .20) (+) availability of drugs at age 10 ( <i>r</i> = .10) (+) availability of drugs at age 14 ( <i>r</i> = .21) (+) rate of adult crime at age 14 ( <i>r</i> = .25)
Paschall & Hubbard (1998)	<i>N</i> = 180, 12–16-year-olds All AA boys 3 year longitudinal	<i>Census tract &amp; individual</i> NBH Poverty % public assistance % under poverty level % unemployed NBH problems Self-report	<i>Individual</i> Propensity for violent behavior Beliefs supporting aggression Conflict resolution style	NBH poverty was not related to propensity for AB ( <i>r</i> = .05, <i>ns</i> ) Found evidence for mediating effects for family stress and self-worth on the relation between NBH poverty and propensity for violence
Lynam, Loeber, & Stouthamer-Loeber (1999)	Pittsburgh Youth Study Study 1: <i>N</i> = 480, 13 year boys Study 2: <i>N</i> = 80, 13–17 year boys 40 high-impulsive, 40 low-impulsive	<i>Census tract &amp; individual</i> NBH quality SES (at age 13) Self-report danger/crime	<i>Individual</i> Delinquency status, theft, vice, violence, & total # of acts	NBH quality (controlling for family SES) Study 1: at age 13 (+) theft & violence at 13 Study 2: at age 17 (+) total, status, theft, violent offense at age 17 High age 13 impulsivity × age 17 low NBH quality predicted age 17 total, theft, and violent offenses
Simcha-Fagan & Schwartz (1986)	<i>N</i> = 533, 11–17-year-olds Urban sample 294 AA, 238 EA	<i>Census tract &amp; individual</i> Organizational participation Informal structure of personal ties NBH disorder-criminal subculture	<i>Individual</i> Delinquency self-report Association with deviant peers Official records of delinquency	Direct effects of NBH: Organization participation (+) self-report delinquency (tract) (+) self-report delinquency (individual) Disorder-criminal subculture (+) self-report delinquency (tract) (+) official delinquency (tract) (+) official delinquency (individual) (+) severe self-report delinquency NBH effects attenuated, but significant, controlling for family & individual variables Significant interactive effects for individual × NBH poverty on official and severe self-reported delinquency

Table II. (Continued)

Investigator(s)	Data set and sample	Neighborhood level and variables	Outcome/level	Results
Peeples & Loeber (1994)	Pittsburgh Youth Study N = 506, 12–16-year-old boys 219 EA, 290 AA	Census tract NBH type (underclass/not underclass) SES Structure Danger/crime	Individual Delinquency frequency seriousness	Direct effect of NBH type on serious and frequency of delinquent acts controlling for family-level SES The predictive power of ethnicity on delinquency disappeared when family, individual, and NBH variables were controlled
Simons, Johnson, Beaman, Conger, & Whitbeck (1996)	Iowa Single-Parent Project (ISPP) N = 207, 13–14-year-olds All rural middle to lower middle SES Cross-sectional	Census tract Proportion single-parent NBH disadvantage Proportion male unemployed Proportion receiving aid Proportion <HS diploma	Individual Conduct problems Delinquency Drug use Aggression Affiliation with deviant peers	For boys NBH disadvantage (+) CP (r = .29) (+) affiliation w/deviant peers (r = .17) In structural equation analyses: NBH disadvantage was indirectly related to boys' CP through "quality of parenting" and deviant peers For girls, no direct or indirect effects of NBH disadvantage on CP or deviant peers

Note. NBH = neighborhood; SES = socioeconomic status; PH = public housing; AB = antisocial behavior; AA = African American; EA = European American; CP = conduct problems.

AB; however, findings are mixed for middle childhood samples and a consistent pattern is difficult to isolate. Ten of the 15 studies in Table III reported correlations between neighborhood factors and antisocial outcomes; six found significant results. Some investigations examined the unique contribution of community-level neighborhood factors in predicting outcomes. When unique effects were found, they were generally quite modest. Correlations rarely exceeded .25 (e.g., Maguin et al., 1995), most were closer to .10 (e.g., Guerra, Huesmann, Tolan, Van Acker, & Eron, 1995; Seidman et al., 1998), and variance contributed by neighborhood factors averaged approximately 4% (Guerra et al., 1995). Overall, neighborhood effects tended to be qualified by interactive effects with other variables.

**Neighborhood Poverty and Antisocial Outcomes**

Loeber et al. (1993; Wikstrom & Loeber, 1999) found *neighborhood poverty/SES* to be associated with AB pathways, but their results suggested that neighborhood poverty only had a distinct effect in explaining late-starting AB. The majority of the research listed in Table III included a measure of neighborhood SES. Some of the results are supportive of those demonstrated by Loeber and colleagues, whereas others are not. Three studies are consistent with the idea that poverty/SES may play a more direct role in the development of aggression than has been previously theorized, particu-

larly for younger children undergoing certain risks. Kellam, Ling, Merisca, Brown, and Ialongo (1998) and Guerra et al. (1995) found significant but modest correlations between neighborhood SES and ratings of conduct problems in young children. Neighborhood poverty demonstrated a unique effect on predicting aggression after entering appropriate control variables and also significantly interacted with family-level poverty in the Guerra et al. study, such that those children who experienced high family-level and high neighborhood-level poverty had significantly more conduct problems. The Kellam study is remarkable in that school poverty independently predicted variance in aggression 6 years later, even after controlling for initial aggression. These findings are consistent with the idea that neighborhood poverty may have an important effect for the early-starter pathway, particularly for children living in impoverished families. However, it may be argued that school poverty is not the best indicator of neighborhood disadvantage, and as in other studies, neighborhood- and family-level poverty are likely to be confounded.

Kupersmidt et al. (1995) failed to find unique effects for neighborhood poverty using a similar index, although they did find interactive effects. Risk for aggression was highest for low-income, AA boys from single-parent homes, but only for those living in low-SES contexts. Risk was not increased for boys living in middle-SES contexts, indicating a neighborhood effect. The authors note that AA, low-income, single-parent children appeared to be especially vulnerable to community poverty. These findings support

**Table III.** Exposure to Violence and Victimization and Antisocial Behavior During Middle-to-Late Childhood

Investigator(s)	Data set and sample	Neighborhood level and variables	Outcome/level	Results
Miller, Wasserman, Neugebauer, Gorman-Smith, & Kamboukos (1999)	Lowenstein Prediction Study <i>N</i> = 97, 6–10-year-old boys All siblings of convicted 51% AA, 45% Latino 2½ year longitudinal	<i>Individual</i> ETV Self-report	<i>Individual</i> Delinquency CBCL mother-report	Levels of ETV Were high (25% witnessed murder) (+) current AB ( <i>r</i> = .23) (+) change in AB ( <i>r</i> = .31) ETV was not related to parent–child conflict, monitoring, or involvement ETV did not uniquely predict AB, controlling for Time 1 AB and parenting ETV and parent–child conflict interacted to predict Time 3 AB
Attar, Guerra, & Tolan (1994)	<i>N</i> = 384, 6–10-year-olds 220 AA, 164 Latino 1 year longitudinal	<i>Census tract, school, &amp; individual</i> NBH disadvantage % free lunch in school Composite of income % receiving aid, type of housing, # of abandoned buildings, & crime rates ETV Self-report	<i>Individual</i> Aggression Peer-nominated Teacher-report	High NBH disadvantage areas (+) exposure to stressors ETV (+) peer-rated aggression ( <i>r</i> = .22) In regression analyses ETV predicted aggression, controlling for Time 1 aggression High NBH disadvantage × ETV predicted higher # of stressful events
Lynch & Cicchetti (1996)	<i>N</i> = 322, 7–12-year-olds 188 maltreated 63% boys, 37% girls 62% AA, 12% Latino 1 year longitudinal	<i>Individual</i> ETV Maltreatment status	<i>Individual</i> Externalizing problems Camp counselor report	Maltreatment status × ETV predicted externalizing problems ETV did not add to prediction of Time 2 externalizing when age, ethnicity, # of children in home, maternal education, Time 1 externalizing, and maltreatment status were entered ETV levels (especially witnessing violence) varied across clinical and nonclinical externalizing groups
Guerra, Huesmann, Tolan, Van Acker, & Eron (1995)	<i>N</i> = 1935, 8–13-year-olds 49% boys, 51% girls 45% AA, 36% Latino, 18% EA 2 year longitudinal	<i>Census tract, school, &amp; individual</i> NBH stressful events (violence) Self-report	<i>Individual</i> Aggression Peer-nominated Teacher-report	Stress from NBH violence (+) peer-rated aggression ( <i>r</i> = .16) In regression analyses NBH violence added variance when entered after individual, family, and NBH-level variables
Selner-O'Hagan, Kindlon, Buka, Raudenbush, & Earls (1998)	Project on Human Development in Chicago NBHs (PHDCN) <i>N</i> = 80, 9–24-year-olds 61% boys, 39% girls 47% AA, 38% EA, 10% Latino	<i>Individual &amp; police district records</i> ETV Self-report NBH Crime	<i>Individual</i> AB Perpetration of crime Self-report	ETV relatively low for 9–12-year-olds, compared to older peers Linear, positive relation between level of crime and past year ETV Those with highest level of NBH crime were 17× as likely to witness a shooting during past year ETV higher for boys and for AA Violent offenders were 3.5× as likely to have been victims of violence and 10× as likely to witness violence during last year
Dubrow, Edwards, & Ippolito (1997)	<i>N</i> = 315, 9–12-year-olds 48% boys, 52% girls 46% AA, 33% EA 12% Latino Cross-sectional	<i>Individual</i> NBH disadvantage Crime/danger Poverty	<i>Individual</i> AB Drug use Self-report	NBH disadvantage (+) AB ( <i>r</i> = .33) (+) drug use ( <i>r</i> = .20) In regression analyses NBH disadvantage predicted unique variance after entering age and gender NBH disadvantage × peer support (high NBH & high peer support) predicted greater AB and drug use

Table III. (Continued)

Investigator(s)	Data set and sample	Neighborhood level and variables	Outcome/level	Results
Gorman-Smith & Tolan (1998)	N = 245, 10–13-year-olds Longitudinal	Individual ETV Self-report	Individual Aggression Self-report Parent-report Teacher-report	ETV was relatively high (e.g., 68% had witnessed someone beaten up) ETV (+) increase in aggression (controlling for Time 1 aggression)
Farrell & Bruce (1997)	N = 436, 11–12-year-olds 182 boys, 254 girls 90% AA Longitudinal	Individual ETV	Individual Serious violence Self-report	ETV (+) serious violent behavior, cross-sectionally ( $r = .40$ ) ETV predicted changes in serious violence for girls, longitudinally
Thornberry (1998)	Rochester Youth Development Study N = approx. 1000 middle school students Longitudinal	Individual NBH violence Parent-report	Individual Gang entry	For boys NBH violence unrelated to gang entry For girls NBH violence (+) gang entry ( $\log r = .08$ )
Esbensen & Huizinga (1991)	N = 877, 11–15-year-olds Cross-sectional	Individual & census tract NBH social disorganization Personal victimization in NBH Property victimization in NBH	Individual Serious delinquency Self-report	Factor analyses of NBH social disorg. variables established 3 NBH clusters (traditional, dense, AA/single-parent) Lifetime and last year prevalence of personal and property victimization were higher in dense and AA/single-parent NBHs
Pettit, Bates, Dodge, & Meece (1999)	Child Development Study N = 342, 12–14-year-olds 52% boys, 48% girls 17% AA Primarily middle class	Individual NBH safety & ETV	Individual Externalizing problems Teacher-report	NBH safety/ETV (+) 6th grade externalizing ( $r = .27$ ) (+) 7th grade externalizing ( $r = -.32$ ) In regression analyses No direct effect of NBH safety on 7th gr. externalizing, controlling for 6th gr. High unsupervised peer contact $\times$ low parental monitoring predicted (+) 7th gr. externalizing, controlling for 6th gr.
Paschall (1996)	12–16-year-old boys 2 year longitudinal	Individual ETV	Individual Violence Self-report	Odds ratio between ETV at 12–16 years and violence at ages 14–18 = 2.3
Lahey, Gordon, Loeber, Stouthamer-Loeber, & Farrington (1999)	Pittsburgh Youth Study N = 347 boys Middle sample only 12–14 years at entry 18–21 years at follow-up 6½ year longitudinal	Individual NBH danger/crime	Individual Gang entry Age of onset Types of delinquency Seriousness of delinquent behavior	No direct effect of NBH crime on gang entry High NBH crime $\times$ committing offenses against persons predicted entry into any gang
Schwab-Stone, Ayers, Kaspro, Voyce, Barone, Shriver, & et al. (1995)	N = 958 6th grade, 809 8th grade, & 481 10th grade students 49% boys, 51% girls 80% AA or Latino Cross-sectional	School & individual Low SES free lunch status ETV Feelings of Safety	Individual AB Aggression Antisocial acts	In regression analyses ETV and feeling unsafe predicted AB, controlling for gender, grade, SES, & ethnicity ETV was strongest predictor of AB (accounting for 19.4% of variance)
Aneshensel & Sucoff (1996)	N = 877, 12–17-year-olds 54% boys, 46% girls 48% Latino, 25% EA, 10% Asian Cross-sectional	Individual NBH ambient hazards Danger/safety, ETV self-report	Individual CD ODD Self-report	More NBH ambient hazards In underclass NBHs For older teens For AA In regression analyses NBH ambient hazards predicted CD & ODD, controlling for NBH structural & individual demographic variables, family SES, and family structure More CD in underclass NBHs (& when high rates of AA) More ODD in middle-upper class NBHs

Note. NBH = neighborhood; ETV = exposure to violence; SES = socioeconomic status; AB = antisocial behavior; CD = conduct disorder, ODD = oppositional-defiant disorder; AA = African American; EA = European American.

the potentiating effect of neighborhood poverty on early aggression above that of family factors, and suggest that the risks may be due to lack of successful role models or the presence of stressors such as persistent ETV in low SES communities. Results are also consistent with a synergistic effect of family- and neighborhood-level poverty on early-starting pathways (Aber, 1994). However, these studies did not distinguish early-starters, or persistent offenders, and so results can only be inferred regarding pathway effects. Also, the effects of neighborhood poverty relative to other risk factors were not reported.

It should be noted that in some studies, direct or interactive relations did not emerge (Aber, 1994; Beale-Spencer, Cole, Jones, & Swanson, 1997; Beale-Spencer, McDermott, Burton, & Kochman, 1997; Paschall & Hubbard, 1998). Moreover, studies investigating neighborhood SES/poverty variables for these studies generally did not find unique effects on the prediction of antisocial outcomes (Aber, 1994; Beale-Spencer, Cole, et al., 1997; Beale-Spencer, McDermott, et al., 1997). Nonsignificant results from the two Beale-Spencer et al. studies are perplexing, given that neighborhood context was measured rigorously and through multiple methods. They did find that neighborhood variables seemed to be operating differently across low- and high-risk contexts, and across gender groups.

Only two studies investigating effects of neighborhood poverty have tested for mediation effects. Simons et al. (1996) found support for indirect effects of community disadvantage on boys' conduct problems. Significant relations between quality of parenting and affiliation with deviant peers and AB were attenuated when poverty was considered. This study involved 13–14-year-old children living in rural contexts, and assessment of peer involvement consisted of one mother-reported item. Paschall and Hubbard (1998) demonstrated weak mediating effects of family stress and child self-worth; however, as they failed to find an initial significant relation between neighborhood poverty and violence, rules for testing mediation were likely violated (Baron & Kenny, 1986).

### **Neighborhood Crime and Dangerousness and Antisocial Outcomes**

Although effects of community poverty/SES might be inconsistent, neighborhood danger and crime might show more direct relations with early-starting pathways, particularly if processes associated

with these two risk factors operate more strongly on the initiation into crime rather than other forms of AB. However, results were again mixed, as several studies with late childhood samples illustrated small, significant correlations (Maguin et al., 1995; Seidman et al., 1998; Simcha-Fagan & Schwartz, 1986), whereas others did not (Beale-Spencer, Cole, et al., 1997; Beale-Spencer, McDermott, et al., 1997). Only one examined community levels of neighborhood crime and violence in middle childhood. Coley and Hoffman (1996) found that teacher-rated "acting out" behaviors were higher for unsupervised 9–10-year-old children, but only for those living in neighborhoods characterized by *low* crime rates. They note that because the analyses are correlational and cross-sectional, the counterintuitive direction of effect may result from parents in dangerous neighborhoods being more likely to monitor children who have previously acted out. Relations for this age group need to be replicated; it is still unclear what is occurring for younger children. It may be that individually assessed levels of danger show stronger relations with individual outcomes. Finally, one study explored the unique effects of crime in the neighborhood. Simcha-Fagan and Schwartz (1986) reported that strength of relations was attenuated, but remained significant, when variance contributed by individual and family variables was taken into account.

Three investigations combined measures of neighborhood SES and dangerousness/crime. Peebles and Loeber (1994) found that delinquency was higher in underclass/dangerous compared to non-underclass neighborhoods, even after controlling for family SES. Lynam, Loeber, and Stouthamer-Loeber (2000) demonstrated that neighborhood quality was significantly related with delinquency at ages 13 and 17. An interactive effect emerged such that impulsive boys living in the poorest neighborhoods exhibited the greatest risk for serious delinquency. They posit that impulsivity heightens susceptibility to the negative effects of disorganized neighborhoods that lack social controls against crime. Seidman and colleagues (1998) found a counterintuitive interaction showing that older children living in relatively moderate risk environments reported greater AB than low or high risk contexts. They suggest that social comparison processes across SES and ethnicity may help to explain the increase of AB in the relatively higher income, less dangerous contexts (Kupersmidt et al., 1995). Alternatively, parental monitoring may be lower in these less dangerous areas, resulting in more opportunity for children to engage in AB (Coley & Hoffman,

1996). Monitoring was not assessed in this study and gender effects were not considered.

In summary, it appears that factors related to community-level neighborhood poverty and crime may affect the development of AB across middle-to-late childhood. Regarding neighborhood effects on early-starting pathways, it appears that community-level economic disadvantage is associated with early- and late-starting pathways (Loeber & Wikstrom, 1993; Wikstrom & Loeber, 1999), although it is not yet clear if neighborhood poverty is directly related to the initiation of *early-onset* serious aggression or other forms of AB. In addition, the notion that community-level neighborhood violence might be more strongly related to early onset has yet to be tested. There is some evidence that neighborhood poverty potentiates the effects of other risk variables, such that risk for early AB might be increased for those children who experience both a poor neighborhood environment and child risk factors, such as impulsivity or early conduct problems, or family-level factors such as poverty or single parenting. In general, patterns of neighborhood-level effects on the *onset timing* of AB were not discernible from existing studies, primarily due to methodological problems (e.g., onset age was not assessed), but initial results are consistent with the posited theoretical developmental framework (Fig. 1).

### Early Exposure to Violence and Victimization and Early-Starting Antisocial Pathways

There is a plethora of theoretical arguments supporting the idea that exposure to violence and early personal victimization experienced within the neighborhood context may be related to the onset and progression of AB (Osofsky, 1995), especially for children in middle-to-late childhood. Until recently, there have not been any systematic studies of exposure to violence and crime during this developmental period (Miller et al., 1999), explicitly in relation to onset of serious aggression and delinquency. Table III summarizes the current research for late middle-childhood.

A study from the Pittsburgh Youth Study is one of the few to examine age of onset of serious AB specifically in relation to exposure to danger. Although the primary outcome was gang initiation, the study is included in this review because of its focus on neighborhood danger and onset timing. Lahey, Gordon, Loeber, Stouthamer-Loeber, and Farrington (1999) found no greater risk for boys' entry into a seriously violent gang by neighborhood danger, but did find a

significant interaction effect, such that living in a high-crime neighborhood and engaging in crimes against persons was associated with being in a gang. The strongest predictor was boys' prior AB and having delinquent friends. Low parental supervision and having delinquent friends were related to gang entry in early, not later adolescence. Because neighborhood danger was assessed over many waves, neighborhood crime occurring before gang entry was explored. They did not find support for a neighborhood triggering effect. However, data were analyzed beginning around age 13–14. Perhaps effects for neighborhood danger would have been found for younger boys, as 24 boys who had reported joining a gang prior to age 13 were omitted from analyses.

A few studies of ETV have utilized samples involving younger children, beginning data collection before or around the age of risk for early-onset pathways. Miller et al. (1999), in a longitudinal study of high-risk 6–10-year-old boys, found that ETV significantly predicted unique variance in boys' later AB after controlling for previous behavior and three types of family interaction variables. Results can be considered robust, as the outcome was rate of delinquency, stability of behavior over time was high, and there were different informants across constructs. In addition, witnessed violence interacted with parent–child fighting, such that at low levels of fighting, higher witnessed violence predicted AB. Results suggest that if a boy endures either high levels of parent–child fighting or neighborhood violence, he is at high risk for serious AB. Parental monitoring, while correlated with delinquency, was unrelated to ETV, suggesting that monitoring did not “protect” a child from witnessing community violence.

Attar et al. (1994) found that higher ETV predicted peer-rated aggression 1 year later for 6–10-year-olds living in poor neighborhoods, controlling for Time 1 aggression. ETV was the largest concurrent predictor of aggression after controlling for sex, grade, and ethnicity. A significant interaction revealed strong relations between exposure and aggression only under conditions of high neighborhood disadvantage. This result is consistent with the notion that children in poor environments observe neighborhood violence firsthand, and that such children are likely to become highly aggressive. Using a larger sample including the above, Guerra et al. (1995) found additional support for direct effects of ETV on peer-rated aggression. Neighborhood violence significantly predicted aggression, above and beyond that predicted by grade, individual poverty status, school poverty

status, interaction of individual and school poverty, and stressful life events. However, their measure of neighborhood and family poverty (% of students receiving free lunch within schools) may not reflect true neighborhood and family SES. The results were replicated in a sample of 6th to 10th graders, also using a free-lunch status measure of family poverty. Serious AB was predicted by ETV and feelings of safety (Schwab-Stone et al., 1995).

Three other studies involving middle childhood samples demonstrated similar results. Although measurement of neighborhood varied, Dubrow, Edwards, and Ippolito (1997), Gorman-Smith and Tolan (1998), and Farrell and Bruce (1997) all investigated ETV, neighborhood disadvantage, and AB in children initially ranging in age from 9 to 14. In each, ETV and danger predicted unique variance in AB over various control variables. Dubrow et al. found neighborhood violence and peer support to be operating interactively. High levels of neighborhood violence and high peer support predicted high ratings of AB and drug use. They suggest that "peer support" may have actually reflected a measure of peer pressure, which they hypothesize acted as an exacerbator to the stress of neighborhood violence.

Gorman-Smith and Tolan (1998), studying AA and Latino boys in an urban environment, demonstrated that witnessed community violence had a strong effect above that of Time 1 aggression, stressful life events, and five aspects of parenting on Time 2 aggression. A significant interaction revealed that in families high on parental structure, the relation between ETV and child aggression was significant 2 years later, but not in families low on structure. This is consistent with the findings of Miller et al. (1999), who found that ETV *or* coercive family interaction increased risk status, but having both present did not increase risk status further. Both studies failed to find a significant association between ETV and parental monitoring, supporting the notion that even highly organized families may not be able to shield children from the effects of ETV in urban settings. Lastly, Farrell and Bruce (1997) found concurrent correlations between ETV and violent behavior, but subsequent changes in violence only for girls. However, boys reported very frequent ETV and high levels of violent behavior.

Contrary to the above, Pettit et al. (1999) did not find main effects for ratings of neighborhood safety on conduct problems when controlling for demographic variables, but did find significant interactive effects

with family variables. They discovered that children with low neighborhood safety, low parental monitoring, and more time spent in unsupervised contact with peers, had significantly greater conduct problems at ages 12–13, controlling for prior problems. These findings are consistent with the hypothesized importance of involvement with deviant peers across different neighborhood contexts in the onset of early AB. In this study, children's exposure to neighborhood danger was modestly related to parental monitoring ( $r = .27$ ).

As discussed earlier, one potential mechanism by which neighborhood violence may facilitate the early onset of antisocial pathways is through the increased potential for personal victimization in highly violent communities. Only two studies examined relations among ETV and personal victimization in relation to antisocial outcomes for middle childhood. Lynch and Cicchetti (1998), in a sample consisting of maltreated and nonmaltreated groups of 7–12-year-old children from a semirural area, found that ETV was directly associated with increased levels of child maltreatment, specifically severe neglect and physical abuse, which in turn was related to child externalizing problems. However, after demographic control variables were considered, child maltreatment status, but not violence exposure or victimization, predicted unique variance. The authors note that child maltreatment is reflective of family-level victimization, but may be facilitated in part by stress and violence in communities (see Garbarino et al., 1991). This might be particularly true here, as maltreated children may have included family-based violence in their ratings of neighborhood violence, thus posing a confound. However, the authors did find that when the sample was divided into clinically- and nonclinically-significant scores on externalizing problems, witnessing violence was higher for those with severe problem scores. These results were further supported by Selner-O'Hagan et al. (1998), who reported that among 9–24-year-olds living in inner-city contexts, those who engaged in violent AB were  $3\frac{1}{2}$  times as likely to have been victims of violence and 10 times as likely to have witnessed neighborhood violence over the past year.

In summary, the above findings are consistent with the idea that rates of ETV and victimization: (1) are high in urban areas; (2) exhibit predictive relations with AB, especially for more serious outcomes; (3) can be demonstrated during middle childhood; and (4) have unique effects above that of family- and individual-level variables during this developmental period. In addition, there is some evidence that ETV

in the neighborhood interacts with peer and parent-child relationships, and that neighborhood risk may only add to deleterious outcomes when family risks are low rather than high (Gorman-Smith & Tolan, 1998; Miller et al., 1999; Richters & Martinez, 1993). However, one study found greater aggression for the configuration involving high family and high neighborhood risk (Attar et al., 1994). Parental monitoring was found to be largely unrelated to violence exposure, except in a relatively low-risk sample, supporting the notion that children in inner-city environments experience neighborhood violence despite parents' attempts to limit exposure from it. Lastly, results of a few of the above studies and recent theoretical work suggest the importance of assessing interaction with peers along with neighborhood factors (Dubrow et al., 1997; Pettit et al., 1999).

### **Deviant Peer Culture in Neighborhood Contexts and Early-Starting Antisocial Pathways**

The role of deviant peers in developmental pathway theories is typically hypothesized to be stronger in adolescence and thus, play a significant role on later-starting pathways (Moffitt, 1993b; Patterson et al., 1994). There has been debate regarding the more direct role that deviant peers may play in the onset of early AB. Investigations have evolved along two lines. In the first, questions regarding the contribution of peer AB to the onset of children's AB have been explored. Because some study low-income, urban samples, consideration of potential relations in high-risk neighborhood contexts can be examined. In the second, of which there are few studies, peer and children's AB are explored in relation to neighborhood factors, such as community poverty. Table IV describes the studies examining peer variables in relation to the early onset of AB.

### **Peer Antisocial Behavior and Early-Onset Antisocial Pathways**

Two investigations explored whether peer delinquency was correlated with, and contributed uniquely to, the prediction of AB controlling for earlier child behavior. Tremblay, Masse, Vitaro, and Dobkin (1995) found boys' best friends' ratings of likability and aggressiveness to be concurrently associated with boys' AB at ages 10–12, although they did not find peer behavior to predict AB once controlling for the boys' earlier behavior at age 6. They concluded that

there were no direct peer effects on triggering early-onset AB, and speculated that the influence of peers may be stronger during adolescence. However, neighborhood or nonclassroom-based friends may have a stronger influence on the development of AB, or peer group behavior may play an important role. This was not assessed. Also, the culturally homogenous sample (French-Canadian, middle-class) precludes comparisons with other high-risk samples. In relatively low-risk environments, perhaps parenting may contribute more than peer behavior. Because peer and child antisocial variables prior to or between ages 6 and 10 were not measured, it is unknown whether earlier peer experience played some part in the child's developing AB.

Fergusson and Horwood (1996) and Fergusson, Horwood, and Horwood (1999) found that peer relationship problems and early externalizing problems were concurrently and longitudinally associated with deviant peer involvement. When early AB at age 6 was statistically controlled, the relationship between early peer problems at age 6 and later deviant peer behavior at age 15 became nonsignificant. Additionally, in cross-lagged analyses, the direction of influence appeared to fit the following pattern: behavior problems in middle childhood (around 8–10 years) led to disturbed peer relationship problems and association with deviant peers in adolescence, which in turn facilitated greater levels of AB across adolescence. These results suggest that the influence of delinquent peers is part of a chaining of events leading to serious AB, but not the prime causal factor in the early-starting pathway. However, this study has some limitations. First, true early starters who persisted in AB were not distinguished. If early- and late-starting children were identified and relations tested separately, perhaps early peer problems would have exhibited a stronger effect for one of these groups. Another examination (Tolan & Thomas, 1995) that did distinguish early- from late-starting delinquents found that peer delinquency was associated with early-starting AB, although they did not report longitudinal relations. Second, while teacher-reports of peer relationship problems may adequately reflect children's interactive style with same-age peers within structured classrooms, it may not reflect children's peer relationships in other contexts. It could be that children choose different playmates and act differently under varying conditions. Lastly, neighborhood and family constructs were not assessed; interactions with these and peer constructs may occur (Pettit et al., 1999).

**Table IV.** Peer Delinquency and Early-Onset Antisocial Behavior in Middle Childhood

Investigator(s)	Data set and sample	Peer measure level(s)/setting	Outcome/level	Results
Tremblay, Masse, Vitaro, & Dobkin (1995)	<i>N</i> = 758, 6–13-year-old boys EA, French-speaking Canadian, middle-class low-income NBHs Staggered cohort 2 year longitudinal design	<i>Individual/school</i> Peers' aggressiveness Peers' likability Peer-nominated	<i>Individual</i> AB Overt aggression Covert theft Covert vandalism Self-report	Early-onset pathway was best predicted by boys' age 6 disruptiveness leading to boys' aggressiveness at ages 10–12 leading to overt and covert delinquency at ages 11–13 Best friends' aggressiveness/likability was concurrently associated with AB but not predictive of later AB, controlling for age 6 disruptiveness
Fergusson & Horwood (1996)	Christchurch Health & Development Study <i>N</i> = 916, 8–16-year-olds 16 year longitudinal	<i>Individual/unspecified</i> Peer delinquency at ages 14 & 16 Subject-report	<i>Individual</i> AB CD at age 8 self-report Offending at ages 14 & 16 self- & parent-report	Found evidence for pathway: early-onset CD facilitated associations with deviant peers at ages 14 & 16, which in turn facilitated concurrent and later offending at ages 14 & 16 Direction of influence appeared to be peer deviance leading to offending
Fergusson, Horwood, & Horwood (1999)	Christchurch Health & Development Study <i>N</i> = 942, 9–18-year-olds 18 year longitudinal	<i>Individual/school &amp; unspecified</i> Peer rejection at ages 9–10 Teacher-report Peer delinquency at age 15 Subject- & teacher-report	<i>Individual</i> AB CD at ages 9–10	Early-onset CD problems (+) peer rejection (+) later deviant peer involvement Correlation between peer rejection at age 8 and deviant peers at age 15 was nonsignificant when CD was considered Patterns were similar across gender
Patterson, Forgatch, Yoerger, & Stoolmiller (1998)	Oregon Youth Study <i>N</i> = 206, 9–10-year-old boys 99% EA Low & middle SES 9 year longitudinal	<i>Individual/unspecified</i> Peer delinquency Subject-report Parent-report Peer-report	<i>Individual &amp; court records</i> AB composite Teacher, parent, self, and peer report of overt & covert AOO of 1st arrest Chronic offenses (>4 arrests)	Early-onset (arrest) was best predicted by peer delinquency, above that accounted for by childhood AB and unsupervised wandering Chronic offending was best predicted by early arrest, peer delinquency continued to add variance above early AB Early onset arrest and chronic offending was also predicted by family-level low SES, marital transitions, & parental discipline (but not tested together with peer variables)
Keenan, Loeber, Zhang, Stouthamer-Loeber, & Van Kammen (1995)	Pittsburgh Youth Study <i>N</i> = 1,014, 10–13-year-old boys Middle & older sample 56% AA 2½ year longitudinal	<i>Individual/unspecified</i> Peer delinquency Subject-report	<i>Individual</i> AB Authority conflict Overt delinquency Covert delinquency	Peer deviant behavior (+) boys AB Cross-sectional odds ratios Authority conflict = 2.2 Overt delinquency = 4.3 Covert delinquency = 3.4 Prior exposure to deviant peers predicted boys' subsequent onset of AB (all types) above that accounted for by grade, parental supervision, & parental warmth

Table IV. (Continued)

Investigator(s)	Data set and sample	Peer measure level(s)/setting	Outcome/level	Results
Lahey, Gordon, Loeber, Stouthamer-Loeber, & Farrington (1999)	Pittsburgh Youth Study N = 347, 12–14-year-old boys 50% AA, ~50% EA 6 year longitudinal	Individual/unspecified Peer delinquency Subject-report	Individual Gang involvement AOO Gang delinquency	Peer delinquency was predictive of entry into a serious gang after controlling for boys' own delinquency, but only in early adolescence
Tolan & Thomas (1995)	National Youth Survey N = 984, 11–17-year-olds 55% girls, 45% boys 78% EA, 13.5% AA, 6% Latino 5 year longitudinal	Individual/unspecified Peer delinquency composite of peer involvement & delinquency Subject-report	Individual & police records Delinquency Self-report Official records Seriousness AOO (early <12 years) Peer normlessness	For males Peer delinquency and AOO predicted concurrent serious delinquency, future, general and serious delinquency (both at 2 years past and serious delinquency at later than 2 years) For females AOO predicted general and future delinquency, but less variance than for boys. Peer normlessness was the only peer variable to predict chronic AB above that of AOO and other controls Early-onset group had significantly higher peer delinquency & normlessness than late- & no-onset groups for both boys and girls

Note. AB = antisocial behavior; CD = conduct disorder; AOO = age of onset; AA = African American; EA = European American.

Keenan et al. (1995) explored the temporal impact of deviant peers in conjunction with other individual- and family-level variables on early-starting pathways. They found that risk for onset of authority conflict, overt, and covert pathways was enhanced by earlier exposure to delinquent peers. Specific peer and antisocial variables were highly related. For example, boys with covert peers were 4.3 times as likely to engage in covert behavior themselves. They also examined the hypothesis that certain boys already at risk, characterized by hyperactivity and/or poor parenting practices, would be more susceptible to the early impact of deviant peers. While direct effects were found for parenting practices on the onset of the authority conflict pathway, no other direct effects were demonstrated for parenting or hyperactivity or interactive effects with peer delinquency. The unique contributions of peer deviance remained after controlling for the other variables. Thus, for those children with onset of AB during preadolescence, prior exposure to deviant peers was a significant risk factor. Hyperactivity and parenting practices did not appear to moderate this relation. The sample consisted

of mostly inner-city, urban children, and frequently collected data allowed for identification of ages of onset and temporal relations, and “open” measurement of peer deviancy (i.e., unspecified context, likely to reflect school- and neighborhood-based relationships). These findings are consistent with the idea that deviant peers may exhibit a more causal, direct influence on AB starting in middle-to-late childhood.

A similar investigation was conducted by Patterson et al. (1998). According to their model, association with deviant peers is thought to enhance the probability of AB for already at-risk children. Thus, in this study involving early-onset delinquents (i.e., first arrest prior to age 14), they examined whether peer delinquency (assessed at Grades 6–12) further facilitated more serious AB during preadolescence and adolescence. Their results were consistent with a pathway in which early parenting practices and social disadvantage predicted early AB, which in turn was exacerbated by deviant peers. Peer delinquency greatly added to the risk of preadolescents engaging in increasingly serious AB, while parent monitoring did not. Unfortunately, peer and family/contextual

variables were not tested together in one model to examine relative effects, and peer delinquency prior to Grade 6 was not considered.

### **Peer Antisocial Behavior, Neighborhood Context, and Early-Onset Antisocial Pathways**

The second type of study examines peer and children's delinquency in relation to neighborhood and parenting factors. Wikstrom and Loeber (1999) demonstrated that boys' self-reports of having deviant peers varied by neighborhood context. Peer delinquency was highest for boys who lived in the poorest contexts. Among six individual predictors, including parental supervision, peer deviancy was the strongest predictor of early-onset delinquency. Regarding neighborhood effects, once configurations of individual risks were taken into account, there was no evidence of a direct influence of neighborhood SES context on early-starting paths, but some evidence for effects on late-starting delinquency. However, peer deviancy was regarded as an individual-level characteristic. Although their measure (number of friends who have engaged in deviant acts) may have deemed this appropriate, there remains the problem of categorizing peer variables as individual- or community-level constructs (Darling & Steinberg, 1997). Their categorization may underestimate neighborhood effects, as community contextual factors may overlap or influence the peer construct to varying degrees (Furstenberg & Hughes, 1997).

Although not included in the review, it should be noted that there is much research attempting to establish the antecedents of delinquent peer involvement, as this is recognized as a critical risk factor in pathways research (Dishion, Patterson, Stoolmiller, & Skinner, 1991; Snyder et al., 1996). However, those researchers have not yet examined this in relation to neighborhood context, probably because their respective samples do not exhibit much variability in neighborhood contextual factors. This is an essential next step in future research. It may be that in the most dangerous or poorest neighborhoods, children are more susceptible to negative peer influences in relation to early-onset AB. For example, in later adolescence, the interaction of living in a dangerous neighborhood and having peer problems has predicted poor school performance and dropout, drug use, and child bearing (Brook, Nomura, & Cohen, 1988; Crane, 1991; Gonzales et al., 1996; Mason, Cauce, & Gonzales, 1997).

In summary, the data suggest that deviant peer behavior acts primarily in the escalation of already

existing antisocial tendencies, rather than the initial causal factor leading to early-starting pathways (Fergusson & Horwood, 1996; Fergusson, Horwood, & Horwood, 1999; Tremblay et al., 1995). However, studies are limited due to their conceptualization of peer behavior as a correlate, rather than an antecedent factor in antisocial pathways, and their lack of examination of potential neighborhood factors that may overlap or interact with their measures of peer behavior. Peer deviancy was found to vary across neighborhood contexts and to be related to early-onset pathways (Tolan & Thomas, 1995; Wikstrom & Loeber, 1999), and to be present prior to the onset of serious delinquency in some samples (Keenan et al., 1995). Peer delinquency may be the first stage in the initiation of serious AB, which then sets a child on the early-starting criminal trajectory (Simons, Wu, Conger, & Lorenz, 1994). Studies more closely examining the complex interplay between neighborhood and peer factors, particularly in relation to the timing of serious AB, are greatly needed.

### **DISCUSSION**

The aim of this review was to examine the relations between neighborhood contextual factors and the development of AB across middle childhood. In particular, the hypothesis that neighborhood context may directly and/or interactively affect early-starting pathways was explored. Given that (a) age of onset into pathways leading toward serious, chronic delinquent outcomes tends to occur between ages 6 to 14 (Loeber, 1988; Loeber, Stouthamer-Loeber, van Kammen, & Farrington, 1991); (b) autonomy and independence from caretakers (Steinberg & Silverberg, 1986) and interaction with neighborhood members and institutions increases during this time period (Gephart, 1997); while (c) parental monitoring tends to decrease (Dishion & McMahon, 1998), middle childhood might be a crucial period to examine neighborhood-based effects on developmental pathways toward deviance (Wikstrom & Loeber, 1999). Traditionally, neighborhood factors were thought to be only distally related to early-starting AB, realized mostly through their impact on parenting (Brooks-Gunn et al., 1993). However, recent research had suggested that neighborhood constructs might be more proximally related to early-onset problems. That is, neighborhood factors such as economic disadvantage, violence and danger, and exposure to deviant peer groups may actually "trigger," or at least heighten the risk for the childhood onset of serious delinquency

(Cairns et al., 1997; Dubrow & Garbarino, 1989; Wikstrom & Loeber, 1999). Thus, sociological, psychological, and ethnographic research examining relations between these neighborhood constructs and the onset timing of aggression and AB were presented and evaluated to examine the posited theoretical developmental framework. Overall, results of this inquiry were mixed. It appears that neighborhood contextual factors relate to early-onset AB in complex ways, depending upon the conceptualization and measurement of these variables, and consideration of other individual- and family-level variables.

The overarching issue that emerged is that the integration of theory and empirical research involving neighborhood constructs and child antisocial development is an exceedingly complicated task (Farrington, Sampson, & Wikstrom, 1993). It is clear that there are a number of risk factors contributing to the development of AB, across family, peer, neighborhood, and individual domains, and that there are interwoven direct, indirect, and interactive relations within and across constructs (Bronfenbrenner, 1986; Gephart, 1997). The issue of this overlap among constructs cannot be stressed enough, as intercorrelated and widely categorized variables make disentangling effects difficult (Aber, 1994). Also, the theoretical and measurement differences across perspectives hinders integration and comparison. It is not surprising, then, that few studies were found that specifically examined relations between neighborhood contextual factors and onset and progression of antisocial pathways. Nonetheless, literatures investigating relations between certain components of this hypothesis were brought together to evaluate their potential.

### Summary of Findings

Overall, there was sufficient evidence that neighborhood contextual factors are at least correlates of early-starting AB. General levels of AB in childhood were found to be associated cross-sectionally and longitudinally with *community-level neighborhood poverty and danger* (e.g., Kellam et al., 1998; Loeber & Wikstrom, 1993), individual-level measurements of *exposure to violence* (e.g., Attar et al., 1994; Dubrow et al., 1997; Farrell & Bruce, 1997) and *victimization* in the neighborhood (e.g., Esbensen & Huizinga, 1991; Selner et al., 1998), and *exposure to deviant peers* in the neighborhood (e.g., Fergusson et al., 1999; Keenan et al., 1995; Patterson et al., 1998). Relations tended to be modest. Some studies failed to find direct correlations, generally when using

community-level measures (Aber, 1994; Kupersmidt et al., 1995), and most studies had flaws, so caution is warranted when interpreting results.

The existence of significant correlations does not prove that neighborhoods have a direct impact on early AB. In order to show “triggering” effects, neighborhood effects would need to be evident prior to the initiation of AB, and the effects of other factors, such as parenting, would need to be taken into account. Research designed to examine these issues was not found. Nonetheless, demonstrating significant correlations is a critical first step, as it shows that neighborhood contextual factors are directly associated with AB, even after controlling for other relevant factors, and at an earlier age than traditional theories might hypothesize (Brooks-Gunn et al., 1993; Moffitt, 1993b). A few investigations suggested that the onset timing for early pathways should be adjusted to even preschool-age children for those in the most disadvantaged contexts (Guerra et al., 1995; Kupersmidt et al., 1995).

### Neighborhood Economic Disadvantage and Early AB

The above mentioned research did not directly address the idea that neighborhood factors might be strongly related to the initiation and progression of the early-onset pathway. Children growing up in poor, dangerous neighborhoods with perhaps increased interaction with deviant neighborhood peer groups, might learn and practice serious AB through processes and mechanisms discussed earlier. Those neighborhood factors might then act to maintain or facilitate an increase in AB. Unfortunately, few studies were identified that pertained specifically to early- vs. late-starting patterns, so only tentative conclusions can be put forward. Loeber et al. (1993; Wikstrom & Loeber, 1999) were the only ones to examine neighborhood constructs specifically in relation to early-onset pathways. They found that onset, type, and progression of AB varied by neighborhood SES, and that boys living in poorer neighborhoods tended to progress further into pathways, at earlier ages. They also demonstrated that risks were increased for those living in commercial, inner-city, and/or public housing contexts. However, when comparing early- and late-onset boys across neighborhood and other risk factors, it appeared that neighborhood SES played a more significant role in predicting later-onset status. Thus, neighborhood poverty was related to, but not necessarily acting as a “trigger” for, early-starting

AB. However, peer delinquency, which may be considered as an individual- or, as argued in this paper, neighborhood-level factor, was strongly related to early-starting delinquency. Their work is a critical initial foray. But as findings stem from one data set with only boys, more work is needed.

### **Neighborhood Exposure to Violence and Early AB**

Other findings support the idea that antisocial pathways are facilitated, if not initiated, at an earlier age by factors other than neighborhood-level SES. The literature examining neighborhood ETV demonstrated strong, consistent predictive relations with AB during childhood, but early- and late-onset pathways were not distinguished. The predictive power remained after controlling for other factors, and ETV was related to increases in aggression over time (Attar et al., 1994; Gorman-Smith & Tolan, 1998). Children living in high-risk, urban environments frequently observed violent and criminal behavior, and they in turn had higher rates of aggression and delinquency (Selner et al., 1998). Thus, the mechanisms by which neighborhood contexts may affect the development of AB in children could include the disruption of emotion regulation processes associated with the stress of witnessing violence (Osofsky, 1995), or through learning and modeling aggressive problem-solving skills (Bandura, 1986; Farrell & Bruce, 1997). Likewise, the small literature documenting positive associations between victimization and offending in specific community contexts also suggests mechanisms for effects, perhaps through learned helplessness turning to anger and desire to “seek revenge.” However, one caveat must be noted. Relations may have been stronger for ETV and aggression than for community-level SES due to shared method variance (both assessed at individual levels), although the consistency of results across the varied instruments and samples tempers drawing this conclusion.

### **Neighborhood Peer Relations and Early AB**

Additionally, exposure to deviant peer groups was also found to be consistently associated with AB. Unlike research with SES and ETV constructs, deviant peer involvement has been examined specifically in relation to early-onset pathways. The majority of research showed that involvement with delinquent peers was associated with the initiation of the early pathway and subsequent increases in serious AB. Keenan et al. (1995) found that deviant peer involve-

ment occurred before the onset of serious delinquency in boys. Moreover, peer AB predicted unique variance above that accounted for by parental monitoring and warmth, supporting the idea that peer AB may act as a trigger in early-onset pathways. Peer group behavior is thought to influence AB through modeling and reinforcing conformity in group delinquent behavior, providing justification for deviant acts, and by impeding the amount of interaction with conventional role models (Kaplan, Johnson, & Bailey, 1987; Parker et al., 1995).

Debate currently exists about whether deviant peer group effects belong in the “individual” or “neighborhood” risk factor category. Some researchers contend that individuals, and parents through monitoring, (Dishion & McMahon, 1998) determine their level of involvement with peers. The typical methods of assessment in developmental research reflects that perspective. However, sociological and criminological work often conceptualizes peer behavior in terms of community-level effects. It has been argued that the behavior of neighborhood-based, mixed-age peer groups and gangs is likely to have wide-reaching effects on many community members, particularly in neighborhoods where social control of children is low (Allison et al., 1999; Sampson, 1993; Simons et al., 1994). The studies reporting increased awareness and fear in child and adult behavior due to presence of gangs and deviant peer groups in the neighborhood is consistent with this idea (Dubrow & Garbarino, 1989). Community-level assessments of deviant peer behavior predicted individual levels of AB above that of family- and other individual-level factors in older adolescents (Darling & Steinberg, 1997). Regardless, “deviant peer group” constructs are likely to exhibit overlapping, and certainly transactional effects with other neighborhood- and peer-based factors (Thornberry, 1998). In this review, deviant peers were examined as a primarily neighborhood-based factor to shed some light on this issue. Future research should involve careful assessment and partition of neighborhood- and school-peer group characteristics.

### **Neighborhood Effects in High-Risk Contexts Such as Public Housing**

In the Introduction, the hypothesis was posited that neighborhood effects on early-starting AB might be particularly strong under high-risk contexts. This idea was partially supported. Some studies did find

important interactive effects with individual and family variables. In most, the pattern was such that poor or dangerous neighborhoods in combination with high levels of another risk factor predicted higher AB (Attar et al., 1994; Dubrow et al., 1997; Guerra et al., 1995; Lynam et al., 2000; Simcha-Fagan & Schwartz, 1986). However, in other studies, interactive effects revealed that it was in conditions of low or moderate risk for which neighborhood effects were strong (Gorman-Smith & Tolan, 1998; Miller et al., 1999). These authors suggest how family risk factors may operate more strongly on antisocial outcomes, and thus, neighborhood risk may only add to deleterious outcomes when family risks are low.

One such condition, which seems to be powerfully associated with risk for serious AB, is living in a public housing project. Loeber et al. (1999) found that the prevalence was twice as high in low-SES communities characterized by public housing than similar low SES areas without public housing. Although the number of early-onset boys did not significantly differ across the two low-SES groups, there were more early onsets and significantly more late-onset boys in public housing contexts. Thus, residence in a neighborhood characterized by public housing presents a significant risk for the initiation of at least late-starting delinquency, and is a correlate of early-onset AB. Many factors associated with public housing projects may account for this extreme-risk status. Mothers living in housing projects have reported higher rates of exposure to shootings, gangs, robbery, and rape than similar nonpublic housing communities, and feel powerless to protect their children from being exposed or victimized. They have likened the experience to “living in a war zone” (Dubrow & Garbarino, 1989). Moreover, childhood victimization increases risk for engaging in later AB dramatically (Esbensen & Huizinga, 1991; Osofsky, 1995; Rivera & Widom, 1990). Coulton and Pandey (1992) have discussed that concentrated poverty, crowding, and isolation can lead to sensory overload and stress associated with lack of privacy and learned helplessness, as well as restricted choice for friendship and social support networks (Huckfeldt, 1983; Sampson, 1988). Peer group members may be especially limited for those growing up in isolated housing projects with perhaps less availability or access to nondeviant community resources. Additionally, these peer groups may also see delinquent AB as “the only way out” of the projects. Presently, little research has examined relations separately for public housing residents compared to other contexts. This is an important issue to investi-

gate in future work, particularly in relation to onsets of AB.

### Neighborhood Contextual Factors and Parenting

Although not a focus in this review, the effects of parenting variables need to be discussed given their salience in the literature on pathways. It is clear that early parenting experiences are quite important in the shaping of AB in childhood (Campbell, 1995), and parent-child interactions are key components of early-starting antisocial models (Moffitt, 1993b; Patterson, 1986). Two major issues regarding parenting and neighborhood effects are raised here. First, it is posited that although parenting variables powerfully affect AB for some children, there are other possible pathways by which children come to serious outcomes. Some could be more strongly and more directly affected by neighborhood contextual factors, or different combinations of parent and neighborhood variables (Pettit et al., 1999). As children reach middle childhood, time spent in direct interaction with parents decreases and involvement with members and peers of the neighborhood and school are likely to increase. Patterson et al. (1994) contend that parenting is still the most salient force at this age, through parental monitoring. However, there is some evidence suggesting that even moderate levels of parental monitoring do not protect children from witnessing neighborhood violence, or involvement with deviant peers (Gorman-Smith & Tolan, 1998; Miller et al., 1999). Perhaps the relative impact of parenting versus neighborhood or peer behavior may vary in different environments or at different points of development; this has yet to be examined.

The second issue is one of neighborhood effects on parenting. Neighborhood factors such as poverty, levels of formal and informal social control, and access to institutional resources have prominent effects on parenting behaviors. For example, it has been hypothesized that parents living in more dangerous contexts use more authoritarian methods of parenting to maintain stricter control of their children's activities (Winslow, 2001). Thus, isolating a neighborhood versus a parenting effect becomes difficult. During middle childhood, it appears that there are complex interacting forces involving neighborhood contextual factors and parenting that impact upon levels of aggression and delinquency (Dishion & McMahon, 1998). Further work examining the interplay of neighborhood and parenting strategies is clearly needed.

### Neighborhood Contextual Factors, Ethnicity, and Antisocial Behavior

Issues involving ethnicity, neighborhood context, and AB were raised earlier in the review. Descriptive studies have reported higher prevalence rates and earlier ages of onset for serious delinquent behavior and crime for AA as compared to EA youth (Hawkins et al., 1998). However, it appears that the relation between ethnicity and AB can at least be partially accounted for by neighborhood contextual variables, in particular, those associated with poverty (Guerra et al., 1995; Peebles & Loeber, 1994). Other neighborhood variables may also help to explain the higher rates of AB among AA youth. In many urban areas, a large proportion of children living in public housing residences are AA (Coulton & Pandey, 1992), and public housing is associated with early onset and more serious offending. Esbensen and Huizinga (1991) and Selner-O'Hagan et al. (1998) reported that personal victimization and exposure to violence rates are higher for non-EA children, which is a significant correlate of serious and violent offending (Rivera & Widom, 1990). Alternatively, there may be specific factors related to both cultural diversity *and* context that may be operating on the development of antisocial outcomes. There is a small but convincing body of evidence supporting interactive effects of ethnicity and neighborhood context on antisocial outcomes (Sampson et al., 1997; Winslow, 2001). For example, Kupersmidt et al. (1995) found that risk for aggression was highest for low income, AA boys from single-parent homes, but only for those living in low-SES contexts. Risk was not increased for similar boys living in middle-SES contexts. These types of findings highlight the complexities that contribute to different AB pathways. The role of neighborhood variables in ethnic differences for different types of AB is not yet fully understood, but will be a crucial issue to address in future research.

### Neighborhood Contextual Factors and Gender

Gender issues were also emphasized, although as early-starting patterns during middle childhood were the focus, most of the reviewed work involved only boys. Silverthorn and Frick (1999) have discussed how antisocial girls may fit into a delayed-onset pattern that is analogous to the boys' early-onset pattern. Although they do not posit neighborhood effects as initiating the delayed-onset pattern, it may

play a role in girls' onset timing of more serious AB in early adolescence. The ETV literature showed that girls, particularly when they live in disadvantaged, urban communities, are witnesses to extreme violence at similar rates as boys, and are often victims of violence (Selner-O'Hagan et al., 1998). A retrospective study involving incarcerated female adult offenders indicated that the majority had engaged in street fighting with neighborhood peers as early as 10 years old, and had experienced significant abuse from community members (Sommers & Baskin, 1994). Future research on girls' pathways should take neighborhood violence exposure and victimization into account.

### DIRECTIONS FOR FUTURE RESEARCH

Problems associated with the current research have been presented throughout this review. The key dilemma is that few studies have examined early-onset pathways in relation to neighborhood context in middle childhood. The bulk of the research has used cross-sectional designs that assess broad neighborhood constructs and a variety of antisocial outcomes. The overarching need is for more specific longitudinal examination of the different aspects of neighborhood in relation to the varying dimensions of antisocial behavior at different stages of development. Reaching this type of specificity will be challenging but is crucial for the field. Questions still remain as to exactly *which* neighborhood factors (e.g., residential overcrowding, racial tension, degree of collective efficacy) may contribute to specific antisocial acts (e.g., chronic property crimes vs. selling drugs). Related questions are *how* do neighborhood factors exert effects (e.g., directly through exposure, indirectly through effects on families) and *when* (early childhood vs. middle childhood vs. adolescence). The above review of previous studies speaks to the effects of broadly defined and measured neighborhood factors (e.g., economic disadvantage, deviant peers) on general measures of AB outcomes (e.g., levels of aggression, composite delinquency). These studies provide tantalizing evidence that neighborhood matters for the development of children and families. The next step is to identify the processes and mechanisms of more specific effects.

Previous quantitative studies have documented only modest to small effects of neighborhood factors on AB. To some extent, this may be the result of the restricted range of the neighborhood variables. Studies imbedded in housing projects, or those selecting

very high risk individuals, are likely to draw samples from the same or very similar neighborhoods. With restricted range, it is unlikely that statistical analyses will detect appreciable effects of context. It is crucial that future studies use designs that ensure variability in neighborhood context, and measure these constructs in multiple ways. It may be that neighborhoods have a much more powerful effect than previously detected by affecting other factors known to contribute to AB (e.g., parenting), and some of the other variables that have been widely replicated as important to AB. This paper argues that association with deviant peers may be a function of the neighborhood rather than the individual or a reaction to family context. Longitudinally sensitive research that includes samples with adequate variability in neighborhood context may begin to suggest that other factors are more directly affected by neighborhood context, and this may lead to other identified paths to AB.

To chart the course of neighborhood effects in relation to *developmental pathways*, more complex and creative designs are required. First, a longitudinal design is needed, one preferably beginning before the age of risk for early-starting pathways that follows children through adolescence and adulthood. This would allow for the designation of true early-starting children, who then could be examined in relation to a number of neighborhood and other factors, or could be compared across different neighborhood contexts. Ideally, several specific neighborhood factors, relating to both structural and experiential effects, would be measured at frequent assessments, utilizing a multilevel design involving community-wide and individual-level assessments, and assessing changes and length of residence in a neighborhood. This would allow for more careful study of the direction of effects. It would also be critical to comprehensively assess age of onset and temporal progression, frequency, and seriousness of different types of behavior (Keenan et al., 1995; Stouthamer-Loeber, 1993). Other factors hypothesized to affect AB (e.g., parenting, school) should be considered to determine temporal patterning and relative influence of neighborhood effects, and potential moderating or mediating effects.

In addition, this review has highlighted other important issues for future research. For example, unique experiences involved in public housing contexts should be explored, and subject-perceived boundaries of neighborhood units should be utilized (Burton & Price-Spratlen, 1999). The definition of neighborhood is wide-ranging and is likely to mean

different things to different people at different points in development. For example, for young children growing up in public housing projects, the boundaries of the projects are likely to be the only “neighborhood” they know. For adolescents, with greater mobility and access to other areas, the concept of neighborhood might be quite wide and include several different contexts. The majority of studies examined here have utilized urban samples. Rural samples are sorely underrepresented and should be studied and processes compared (Simons et al., 1994). Relatedly, samples with greater ethnic and gender diversity are needed. Aspects of peer relations, both dyadic and group, school- and neighborhood-based, should be considered in relation to neighborhood- and individual-level effects. Thus, such research designs would go beyond examining general frequency and levels of AB across neighborhoods, and would come closer to accounting for specific patterns of effect of AB across contexts (Loeber & Wikstrom, 1993). Other methods could include examining the effects associated with moving in and out of different neighborhood contexts on AB (Peeples & Loeber, 1994), and continued integration of research across different perspectives, particularly ethnographic data, which some suggest may capture the inscrutable qualities of neighborhoods so difficult to pin down in quantitative, multivariate analyses (Sampson, 1993). Relatedly, Coulton (1997) has suggested that community-level indicators be adjusted for population size, in order to interpret neighborhood data more accurately. Additionally, the complex interplay between context, culture, and ethnicity should be considered, given the “importance of community cultures and value systems on AB and crime” (Sampson, 1993). Studies examining race and ethnicity interactions with neighborhood variables will help greatly to understand ethnic differences in offending and ways in which intervention and prevention might be better designed and implemented. Lastly, this review did not assess neighborhood factors in relation to comorbid conditions with violence and delinquency or the protective effects of neighborhood contexts on developmental pathways (Kupersmidt et al., 1995). All are key issues for future work in this area.

Research incorporating many of the above suggestions and examining neighborhood effects in well-designed and creative ways have been recently undertaken. Two major longitudinal neighborhood projects investigating neighborhood and child development should illuminate the complex and specific effects of these variables.

### **Project on Human Development in Chicago Neighborhoods (PHDCN)**

The PHDCN, headed by Sampson, Raudenbush, and Earls (1997) and begun in 1998, is the largest study ever undertaken to examine the causes of AB and combines two investigations into a single, comprehensive design. The first intensively studies the social, economic, and cultural organization of 80 Chicago neighborhoods over time, and the second is a set of several coordinated longitudinal studies, focusing on effects of ETV and other contextual factors on the development of delinquency and crime, involving 7,000 randomly selected children, adolescents, and adults. The study is utilizing innovative methods with a multilevel design. The researchers are examining multiple levels of informal and formal social control and collective efficacy in relation to child development, particularly on the developmental pathways to AB. The initial findings suggest that neighborhoods vary in collective efficacy and levels of social control. The survey data show that for neighborhoods with low collective efficacy and poor social control, danger and crime is higher, and children in these communities are exposed to high levels of violence (Sampson et al., 1997; Selner-O'Hagan et al., 1998). Thus, this research is identifying a mechanism (i.e., social control) by which neighborhood may exert effects. Future findings from this project will enhance our understanding of the complex interplay of neighborhood and social development.

### **Moving to Opportunities (MTO)**

The MTO studies examine neighborhood effects from a different and creative perspective. The MTO program was implemented in five large U.S. cities and offers a natural experiment of neighborhood changes on social development. Very low-income families were assigned to one of three groups: experimental (they received vouchers and support to move to low-poverty areas), comparison (families received regular vouchers with no neighborhood restrictions), and control (families remained in traditional public housing). These families will then be followed over time, and dynamic changes in neighborhoods and mobility and antisocial behavior will be tracked, allowing for detailed examination of trajectories of AB. Initial findings from the Baltimore site demonstrated that adolescents in the experimental group committed significantly fewer acts of

violent crime when compared to their behavior before their move (Ludwig, Duncan, & Hirschfield, 2001).

### **Implications for Prevention and Intervention**

This review of the effects of neighborhood contextual factors on antisocial developmental pathways sheds light on issues relevant to public policy, intervention, and prevention. First, it appears that middle childhood (Tolan, Guerra, & Kendall, 1995) is a key developmental period in which to apply tailored preventive and intervention programs. In addition to already established programs targeting individual and family level risks, the above findings suggest other components related to neighborhood. For example, key areas to target might include enhancing the sense of safety and attachment within communities and facilitating the collective social control of children's activities through community awareness and social groups (Sampson, 1997), reinforcing positive role models and elders in the community, and creating neighborhood-based youth service groups that help build attachments with conventional adult role models. Fraser (1996) and Dubrow and Garbarino (1989) posit the positive effects of addressing stressful events related to neighborhood contexts, perhaps through raising awareness about the consequences for children or through techniques for children such as dramatic play or storytelling. At this point, it appears that applying multilevel, multicomponent prevention and intervention programs during early and middle childhood is the most effective strategy (Prinz & Miller, 1991; Tolan & Gorman-Smith, 1998). Perhaps with better understanding of the complex and specific interacting neighborhood, individual, and family effects on the onset and course of antisocial behavior, more successful specific interventions targeting the prevention of early-onset AB could be developed.

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