Published in final edited form as:

Am J Community Psychol. 2003 March ; 31(1-2): 35–53.

Neighborhood Structure, Parenting Processes, and the Development of Youths' Externalizing Behaviors: A Multilevel Analysis

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Abstract

Associations among neighborhood structure, parenting processes, and the development of externalizing behavior problems were investigated in a longitudinal sample of early adolescents (from age 11 to 13). Mothers' reports of parental monitoring (at age 11), mothers' and youths' reports of the amount of youths' unsupervised time (at age 11), and youths' reports of positive parental involvement (at age 12) were used to predict initial levels (at age 11) and growth rates in youths' externalizing behavior as reported by teachers. Census-based measures of neighborhood structural disadvantage, residential instability, and concentrated affluence were expected to moderate the effects of parenting processes (e.g., parental monitoring) on externalizing behavior. Hierarchical linear modeling results revealed that less parental monitoring was associated with more externalizing behavior problems at age 11, and more unsupervised time spent out in the community (vs. unsupervised time in any context) and less positive parental involvement were associated with increases in externalizing behavior across time. Furthermore, the decrease in externalizing levels associated with more parental monitoring was significantly more pronounced when youths lived in neighborhoods with more residential instability.

Keywords

neighborhood; behavior problems; parenting; social capital; longitudinal

INTRODUCTION

Parenting has been shown to play a substantial role in socialization, and more specifically, in the development of youth conduct problems (Loeber & Stouthamer-Loeber, 1986). Contemporary developmental research, however, increasingly recognizes the conditional nature of parenting effects. Effects of parenting may depend on other factors, such as child temperament or the environmental contexts in which socialization takes place (Collins, Maccoby, Steinberg, Hetherington, & Bornstein, 2000). Ecological theories propose that the impact of family management practices on development depends on characteristics of the community in which youths and families reside (Bronfenbrenner, 1986). Thus, theoretically,

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neighborhood characteristics moderate associations between parenting and adolescent conduct problems (Coley & Hoffman, 1996; Pettit, Bates, Dodge, & Meece, 1999).

In an examination of the moderating effects of perceived neighborhood dangerousness, Pettit et al. (1999) found that unsupervised peer contact predicted worsening in externalizing behavior (i.e., aggressive and delinquent behavior problems) among adolescents who were monitored less by their parents and lived in neighborhoods perceived by parents as unsafe. Left unanswered by the Pettit et al. (1999) study is how more objective indexes of neighborhood relate to youth adjustment, as well as how neighborhoods relate to adjustment trajectories, both independently and by moderating other effects. The present study extends the Pettit et al. work by using the same sample to investigate independent and moderating effects of census-based neighborhood indicators on adolescent externalizing behavior development. Specifically, we address the following research questions:

1. Do neighborhood structural disadvantage, concentrated affluence, and residential instability relate to initial levels of and/or growth in adolescent externalizing behavior after controlling for individual and family factors?
2. Do gender and parenting practices differentially affect the development of externalizing behaviors depending on the social structure of neighborhoods in which families reside?

Neighborhoods are often characterized by their social structure—the aspects of individuals who comprise them—as well as by the nature of relations among those individuals. Examples of neighborhood structure characteristics are proportions of individuals in poverty and children in single-parent households. More process-oriented neighborhood constructs are social capital (Coleman, 1988) and collective efficacy (Sampson, Raudenbush, & Earls, 1997).

Neighborhood-level social capital reflects the connectedness of social networks among resident adults and youths. Similarly, collective efficacy describes the level of active engagement by neighborhood adults in the support and supervision of youths. Neighborhoods where parents talk to each other about their children's activities or about parenting strategies have more social capital than neighborhoods where parents do not communicate. And neighborhoods where adults intervene, for example, if they see a group of teenagers harassing a younger child, have more collective efficacy than neighborhoods where adults ignore transgressions in public space. Importantly, neighborhood social structure and process are not independent. Sampson, Morenoff, and Earls (1999) showed that neighborhoods comprising more residents who rented (vs. owned) and/or lived there less than 5 years and neighborhoods comprising fewer residents with high-income and/or professional jobs tended to be characterized by less social capital. Furthermore, neighborhoods comprising more impoverished residents were characterized by less collective efficacy.

Analogous to neighborhood-level social capital, family-level social capital is reflected in both the physical presence of adults in the family and the quality of relations among family members (Coleman, 1988). Family-level collective efficacy is simply monitoring and supervision behavior by individual parents. Both family- and community-level social capital and collective efficacy provide social relationships that serve as resources for monitoring youths' behavior and improving their opportunities. Therefore, in neighborhoods with more structural disadvantage and residential instability and less concentrated affluence, we might expect that the burden of socializing youth would fall more squarely on the shoulders of individual parents. Consequently, we hypothesize that youth in families characterized by less parental monitoring and supervision are at higher risk for engaging in problem behaviors if they live in these neighborhoods.

Parent and Neighborhood Influences on Youth Adjustment

Risk factors that reflect low levels of family social capital, such as lack of adult supervision, low parental monitoring, and low positive parental involvement, consistently predict greater levels of conduct problems and delinquency in youth (Loeber & Stouthamer-Loeber, 1986). More unsupervised time “hanging out” in public places, as opposed to being at home or at a friend’s house or being supervised by an adult, has been associated with more problem behaviors both concurrently (Galambos & Maggs, 1991) and prospectively (Flannery, Williams, & Vazsonyi, 1999; Pettit et al., 1999). Moreover, the relations of parental monitoring and aggressive and delinquent behavior occur regardless of ethnic or socioeconomic backgrounds (Ary et al., 1999; Forehand, Miller, Dutra, & Chance, 1997; Gorman-Smith, Tolan, Zelli, & Huessman, 1996; Klein & Forehand, 2000; Pagani, Boulerice, Vitaro, & Tremblay, 1999). Kerr and Stattin (2000; see also Stattin & Kerr, 2000) have argued that the relation between parental monitoring and youths’ adjustment is attributable to youths’ disclosure of information rather than their parents’ tracking and surveillance efforts, as is traditionally assumed. They suggest that youths’ disclosure of information may be influenced by how accepting and warm parents have been in reaction to past disclosures, by youths’ temperamental proneness to communicate freely, and by youths’ emotional attachment to the family, concepts all related to positive parent–youth involvement. Positive parental involvement may also decrease risk for deviance by promoting competence and the internalization of parental values. Consistent with these expectations, positive parental involvement and warmth seem to demonstrate a protective influence on adolescent conduct problems concurrently and prospectively (Klein & Forehand, 2000), as well as on adolescent externalizing trajectories (Scaramella, Conger, & Simons, 1999).

Although it is influential, the family is not the only context that can exert influence on adolescents’ development. Youths may be considerably affected by specific characteristics of the neighborhoods in which their families reside. A growing body of research supports associations between neighborhoods and youth development (see Leventhal & Brooks-Gunn, 2000, for a review); however, these results are not consistent across studies. One national study of adolescent females found that neighborhood affluence decreased risk for having an out-of-wedlock birth and dropping out of high school, even after controlling for ethnicity and family status. However, no independent effects of neighborhood poverty were found (Brooks-Gunn, Duncan, Klebanov, & Sealand, 1993). In contrast, a regional study found independent positive relations between neighborhood socioeconomic disadvantage and both severity and frequency of male delinquency (Peeples & Loeber, 1994) and trajectories of offending (Loeber & Wikström, 1993). Another national study found no independent relations between neighborhood disadvantage or affluence and adolescent male or female antisocial behavior (Aber, 1994).

Such inconsistencies may be attributable to differential effects of neighborhood characteristics on male and female adolescents. In a sample of African American adolescents from predominately poor families, census-based neighborhood risk was associated with more educational risk behaviors (e.g., low attendance and low achievement) among males, but not females (Connell, Halpern-Felsher, Clifford, Crichlow, & Usinger, 1995). Similarly, in a sample of European American adolescents from single-parent families residing in small Midwestern communities, community socioeconomic disadvantage was associated with more conduct problems in males (through deviant peers), but not in females (Simons, Johnson, Beaman, Conger, & Whitbeck, 1996). In another study of African American adolescents, more neighborhood affluence (as indexed by proportions in white collar occupations), but not less poverty, was associated with lower risk for school-leaving among males, but not among females (Ensminger, Lamkin, & Jacobson, 1996). However, in a sample of drug abusers’ adolescent offspring, the presence of professional adults in the neighborhood was associated

with higher achievement among females, but not males (Luthar & Cushing, 1999). In general, it appears that neighborhoods exert more influence on male adolescents than females. When interpreting these results, researchers have speculated that male adolescents are more likely than females to participate in neighborhood activities, so that when positive neighborhood resources are available, males are more likely to benefit, and when resources are absent, they are more likely to be affected negatively (Ensminger et al., 1996).

The studies reviewed above provide evidence for independent neighborhood effects by statistically controlling for individual and family structure characteristics; however, they cannot account for all individual and family factors that may be associated with neighborhood residence. Perhaps the strongest evidence for independent effects of neighborhoods on youths' development comes from studies of housing mobility programs, which come closest to random assignment of families to neighborhoods. In a randomized control study of the Moving to Opportunity program in New York City, Leventhal and Brooks-Gunn (in press) found substantial neighborhood effects on youth and families. Compared to a group of families who did not receive vouchers and remained in public housing, families who received counseling to help obtain private housing in low-poverty neighborhoods had significantly higher rates of parental employment (and lower rates of public assistance), more household resources, better parental physical and mental health, less harsh parent-child relations, improved parental management, and fewer depressive and aggressive problems in the youths 3 years after receiving the vouchers. Unaffected outcomes were parental warmth, youths' participation in school activities and future expectations (which were high in both groups), and adolescent delinquency and substance use (which were low in both groups).

To summarize, there is considerable evidence that youths' adjustment is related to both parenting processes and the structural characteristics of neighborhoods that are associated with less social capital and collective efficacy. There is also evidence that compared to female adolescents, males may be more influenced by neighborhood characteristics. However, there are still many issues that require elucidation. Studies have not yet addressed how neighborhood structure relates to growth trajectories in problem behavior. Furthermore, although residential instability has been associated with aggregated indexes of delinquency (Sampson & Groves, 1989) and alcohol use (Ennett, Flewelling, Lindrooth, & Norton, 1997), its role in the relation between parenting and individual youth adjustment remains unclear. Finally, there are inconsistencies across studies regarding the relative importance of neighborhood affluence and disadvantage. These inconsistencies in effects of neighborhood structure may be attributable to moderator effects of neighborhoods on relations of family factors to behavior problem development.

Moderational Effects of Neighborhood on Family Risks for Behavior Problems

Consistent with ecological theory (Bronfenbrenner, 1986), previous research indicates that the impact of parenting on youth is affected by neighborhood characteristics. For instance, more parental restrictive control has been associated with better cognitive and achievement outcomes in risky neighborhoods, but with worse outcomes in safe neighborhoods (Baldwin, Baldwin, & Cole, 1990; Gonzales, Cauce, Friedman, & Mason, 1996). Similarly, compared to their more closely supervised counterparts, distally monitored elementary-aged children were rated by teachers as acting out less only if they resided in low-crime neighborhoods (Coley & Hoffman, 1996). Lastly, adolescents' exhibitions of autonomy during observed interactions with their parents have been associated with more delinquency among low-income families living in urban neighborhoods, but not among their higher income and/or nonurban counterparts (McElhaney & Allen, 2001). Thus, the actual protectiveness of parenting strategies and other parent-adolescent relationship qualities may vary depending on neighborhood characteristics.

In this study, the risk associated with less parental monitoring, supervision, and positive involvement was expected to depend on the neighborhood where an adolescent resides. Neighborhoods with more economic disadvantage, more residential instability, and less affluence were hypothesized to place more of a socialization burden on individual parents, because the neighborhoods are less likely to offer resources that help with the positive socialization of youth (Sampson et al., 1999). Therefore, adolescents in these neighborhoods were expected to be at higher risk for externalizing behavior problems if their parents did not compensate for the increased socialization demand by monitoring and supervising their children more closely and having more positive involvement in their children's lives. In neighborhoods with more resources, parenting was still expected to play a role in socialization, but not as large of a role as it would in neighborhoods with fewer resources. Lastly, neighborhood structure was expected to be associated independently with increased risk for male externalizing problems more than with female externalizing problems. To increase confidence that any significant neighborhood effects were not attributable to individual or family risk, in all multivariate analyses we accounted for African American ethnicity and family structure characteristics (e.g., single-parent status and family socioeconomic status; Leventhal & Brooks-Gunn, 2000).

This study builds upon previous studies in several ways. First, it examines associations among neighborhood variables and behavior problem development while considering the unique structure of data from youths and families clustered in multiple neighborhoods. It does so by using hierarchical linear modeling (HLM; Bryk & Raudenbush, 1992), a statistical technique that is especially well-suited for simultaneous evaluation of neighborhood-level and family-level variables, and one that has been infrequently used in prior investigations. Second, although most studies reviewed are cross-sectional in design, this study examines the development of early adolescents' externalizing behavior longitudinally. Finally, although previous studies have investigated how positive aspects of parenting may affect adolescents differently in high- and low-risk families (e.g., Baldwin et al., 1990), previous studies generally have not examined the effect of positive parenting or parent-adolescent relations as moderated by neighborhood-level risk (cf. McElhaney & Allen, 2001).

METHOD

Participants and Overview

The Child Development Project (CDP; Dodge, Pettit, & Bates, 1994) is a longitudinal, multisite study that examines the development of aggressive behavior disorders in children and adolescents. Families were recruited in two cohorts in 1987 and 1988 at three sites: Nashville, TN, Knoxville, TN, and Bloomington, IN. At the time of kindergarten preregistration (the April prior to the September of matriculation), parents were approached randomly by research staff and asked to participate in a longitudinal study of child development. About 75% agreed to take part in the study. Because approximately 15% of the children at the targeted schools did not preregister, that proportion of children was recruited on the first day of school or through a letter or telephone call. Of the original sample of 585 youths, 48% were female, 17% were African American, 2% were members of other ethnic groups, and 26% were living in single-parent-headed households. Demographically, the samples recruited from each site were representative of their particular communities. Based on the Hollingshead (1975) 4-factor index of social status, the sample was predominately middle-class, although 26% of the families were classified into the lowest two of the five classes (Pettit et al., 1999).

The first assessment occurred during the summer prior to kindergarten (i.e., when the children were around 5 years old). Annual follow-up assessments of youths were conducted during the school year through Grade 8, and annual follow-up family assessments (via parent questionnaires) were conducted during the summers. In the summer prior to and early fall of

sixth grade, families also participated in home-visit interviews. Later that year, telephone interviews focusing on the use of after-school time were conducted independently with each youth and parent. Teachers' reports on youth behavior were obtained annually during the spring of each academic year. From the kindergarten to the Grade 6 assessments, regular classroom teachers completed ratings. In grades 7 and 8, however, most youths had multiple teachers, and so teachers identified by principals as the most familiar with the youths completed questionnaires. Typically, this was the language arts, home-room, or physical education teacher. The present study used data collected when youths were approximately 11–13 years of age, or around the time that they were in grades 6–8 (see also Laird, Jordan, Dodge, Pettit, & Bates, 2001; Pettit, et al., 1999; Pettit, Laird, Dodge, Bates, & Criss, 2001).

Initial informed consent was obtained from parents prior to the first interview, including specific permission to collect data from teachers and schools. Informed consent was obtained again every succeeding year that the family participated, either in person or via the mail. On each occasion, parents were told the purpose of the study and their rights as research participants, and they were promised modest monetary compensation for their time. If a member of the study staff was not certain that a participating parent was able to read the consent forms, the forms were read aloud.

By the time participating youth were in sixth grade, approximately 80% of the families were still participating in the study. These families were generally representative of the original sample in terms of the youths' gender, ethnicity, family structure, and initial child adjustment (see Pettit, Bates, & Dodge, 1997). Teachers provided reports of youths' externalizing behavior during at least one of the years included in the current analyses for 486 of the participating youth. From this group, youths were excluded from the present analyses for the following reasons: parents did not provide essential family structure information ($n = 24$), addresses could not be matched to neighborhoods ($n = 26$), or information was not available for at least one of the parenting indexes included in the analyses ($n = 8$). Because these categories overlapped, the final sample used in this study consisted of 440 youths: 33% from Nashville, TN, 33% from Knoxville, TN, and 34% from Bloomington, IN. Fifty-one percent of this subsample were girls, 15% were African American, 1% were members of other ethnic groups, and 29% lived in single-parent-headed household when they were age 11. They lived in 150 different neighborhoods during the years included in these analyses. The 440 youths included in this study did not differ from those excluded in terms of proportions of females, African Americans, single-parent-headed households, family SES, or mean teacher-rated externalizing behavior across the 3 years. Because not all participants contributed every measure, the N s vary from one analysis to another.

Procedure and Measures

Neighborhood Structure—Neighborhood membership was determined by matching census tracts to the families' addresses during the majority of the years included in the current analyses. Tracts are “small, relatively permanent geographic entities within counties” that are designed to be “as homogeneous as possible with respect to population characteristics, economic status and living conditions” (U.S. Bureau of the Census, 2000, p. 10-1). They generally have between 2,500 and 8,000 residents. Eighty-one percent of the 440 families lived in the same tract during each of the years included in the present analyses; 17% ($n = 74$) moved once and 2% ($n = 9$) moved twice; 27% of the moves were within the same census tract. Of the 150 tracts represented in the sample, 57% were considered entirely “urban” (vs. “rural”) according to the Census Bureau, 22% were considered more than three fourths urban, 6% more than three fourths rural, and 7% were considered entirely rural.

All neighborhood indexes, derived from 1990 census tract data (U.S. Bureau of the Census, 1990), were standardized across the 150 neighborhoods represented in the sample. *Residential*

instability was estimated by summing standardized scores for the proportion of renter-occupied (vs. owner-occupied) homes and the proportion of householders who had lived in the neighborhood for less than 5 years, $r(150) = .47$. *Structural disadvantage* comprised the proportion of female-headed families, the proportion of individuals in poverty, the proportion of households receiving public assistance, and the proportion of unemployed individuals ($\alpha = .94$). *Concentrated affluence* was based on the proportion of families with incomes of \$75,000 or greater, the proportion of individuals who had received a college degree, and the proportion of individuals employed in professional or managerial positions ($\alpha = .96$). Table I provides the means, standard deviations, and ranges of the indexes comprising the neighborhood constructs. Although most neighborhoods were generally clustered in the middle to advantaged end of the distribution, 23% of the neighborhoods had poverty rates of 20% or higher. The correlations among the indexes comprising the constructs suggest that, in general, the indexes that constitute a particular construct are more highly correlated with one another than they are with indexes that make up another construct.

To evaluate the validity of the neighborhood structure constructs, they were correlated with two related indexes obtained when the youths were 11: parents' appraisals of how dangerous their neighborhoods are (composed of six items adapted from the Self-Care Checklist; Posner & Vandell, 1994; also see Pettit et al., 1999, $\alpha = .90$) and the percentage of students in the youths' schools receiving subsidized lunches (obtained from official school records). Parents' neighborhood danger ratings and the school poverty index were associated significantly and in the expected direction with all three of the composites: neighborhood structural disadvantage, $r(424) = .52, p < .001$ and $r(256) = .56, p < .001$, respectively; concentrated affluence, $r(424) = -.36, p < .001$ and $r(256) = -.49, p < .001$, respectively; and residential instability, $r(424) = .30, p < .001$ and $r(256) = .34, p < .001$, respectively.

Parenting Processes—Using Activity Schedules (Posner & Vandell, 1994) obtained from parents and youths, measures of *parental supervision* were computed. During independently administered telephone interviews, parents and youths were asked to recall the youth's whereabouts from the time school let out until 3 hr later, for the preceding day and the present day. Respondents reported the youths' activities throughout each 3-hr period, and for each activity, how long the activity lasted, where the youth was located (e.g., at home, in neighborhood, in an after-school program), and who was with him or her (e.g., a parent, another adult, peers, or siblings). *Time unsupervised* was the number of hours that youths spent in any context without parents or other adults present. *Time unsupervised while out in the community* was the number of unsupervised hours that youths spent in the community (e.g., in their neighborhoods but not in their own yards) without parents or other adults present. Older siblings or peers were not considered to be "supervisors." Because the correlations between parents' and youths' reports were substantial, time unsupervised: $r(390) = .66$, time unsupervised in the community: $r(390) = .52$, their reports of these time amounts were averaged.

Parental monitoring scores were obtained from the interview administered to parents when youths were entering sixth grade. Some of the items were adapted from existing measures (e.g., Capaldi & Patterson, 1989), and some were developed for the purposes of the CDP. The items assessed parents' awareness of their children's activities, the people present during the activities, parents' opinions regarding the degree of difficulty tracking their children's activities and whereabouts, and parents' beliefs about the level of monitoring their children receive at friends' houses. Parents responded to nine items on a 5-point scale and a monitoring score was computed by averaging the items (see Pettit et al., 1999, for further description of the psychometrics on this scale; $\alpha = .73$). Higher scores represent more monitoring.

Positive parental involvement scores were based on youth responses from the seventh grade interview. The positive involvement scale measured how much parents participate in their children's lives (e.g., how often they attend school-sponsored activities) and converse with them about their lives. Youths rated each of the 10 items on a 5-point scale, and the items were averaged to create the involvement score ($\alpha = .71$). Higher scores represent more positive involvement.

Family Structure Variables—A dummy variable for *single-parent status* was computed according to the family structure when the youth was 11; families with a mother *or* father figure received a “1” (this nearly always refers to a single mother family), families with two parents received a “0.” *Household size* was the number of individuals living in the participating youths' households at age 11. *Socioeconomic status* (SES; Hollingshead, 1975) was determined according to the Hollingshead 4-factor score based on parents' education and job status during each year of the study (or, in the case of single mothers, double the mother scores). The average SES across the 3 years was used in this study.

Individual Characteristics—Youth *age* was indexed by adding 4 to the data collection year, which corresponds to the average age for that phase (e.g., during Year 7 of the study, the youths were considered to be 11 years old). *Ethnicity* was coded “1” for African American and “0” for not African American. Approximately 2% of the sample is neither European American nor African American and was included in the European American group. *Gender* was coded “1” for males and “0” for females.

Externalizing Behavior—The Externalizing scale score on the Teacher Report Form (TRF; Achenbach, 1991) collected during grades 6–8 (or when youths were 11–13 years of age) was used to index behavior problems. The Externalizing scale score is the sum of the 34 items that comprise the Aggression and Delinquency scales on the TRF. Example items are “gets in many fights” and “disobedient at school.” Teachers rated each item on a 3-point scale as *often true* (2), *sometimes true* (1), or *rarely/never true* (0). Cronbach's alpha coefficients indicated good internal consistency at each year (Grade 6: $\alpha = .96$; Grade 7: $\alpha = .95$; Grade 8: $\alpha = .95$). Broadband Externalizing scale scores were used to index problem behaviors because there is little empirical support for differentiation among TRF syndrome dimensions, such as aggression and delinquency (Hartman et al., 1999; cf. Cheong & Raudenbusch, 2002). Teacher scores were used (as opposed to parent scores on a parallel measure) because they describe a distinct setting for child adjustment (see Bates, Pettit, Dodge, & Ridge, 1998) and teachers have a broader frame of reference (Deater-Deckard, Dodge, Bates, & Pettit, 1996).

Analytic Strategy

The hypotheses of this study were tested using HLM (Bryk & Raudenbush, 1992), an optimal technique for studying relations among neighborhood and family characteristics and behavior problem development. The structure of data representing adjustment across multiple time points in a particular context violates a primary assumption of most traditional statistical tests, namely that errors associated with all measurements are independent. Unlike most traditional statistical tests, HLM accounts for intraclass correlation in the data, and therefore provides more efficient estimates of the effects associated with different individuals and neighborhoods than would be provided by ordinary least squares regression techniques. Importantly, this recognition of intraclass correlation is reflected in the expectations that families and youth in the same neighborhood share particular experiences and that there is consistency across time in youths' behavior. Another advantage of HLM is that it permits missing data points at the individual level, which is important in longitudinal studies where every respondent does not participate every year.

RESULTS

Descriptive Statistics and Relations Among Predictors

Neighborhood Structure Constructs—The means, standard deviations, ranges, and correlations of all the variables are presented in Table II. Correlations between the neighborhood constructs indicated that more neighborhood disadvantage was significantly associated with less affluence and more residential instability, whereas affluence and residential instability were entirely independent from one another. Monitoring was the only parenting variable that correlated significantly with aspects of neighborhood structure; more neighborhood disadvantage and residential instability were associated with less parental monitoring and more affluence was associated with more parental monitoring. More neighborhood disadvantage and less affluence were associated with lower family SES and more participants in single-parent families, which would be expected since the variables measure similar structural factors on different levels of analysis. It is interesting that more residential instability was associated with lower family SES and more participants in single-parent families, as well, because these are more independent conceptually. Also shown in Table II, all three neighborhood constructs were significantly associated with African American ethnicity. More neighborhood disadvantage and residential instability were associated with more participants who are African American and more affluence was associated with fewer African American participants. These associations highlight the importance of including key family- and individual-level variables in studies of neighborhood effects (Leventhal & Brooks-Gunn, 2000). Finally, more neighborhood residential instability and disadvantage and less affluence were associated with more externalizing behavior problems at ages 11–13.

Parenting Processes—Of the 3 after-school hours, youths spent an average of 0.7 hr (42 min) unsupervised; about a third of this unsupervised time was spent in the community. There was substantial variation in the amount of time unsupervised (range 0–3, $SD = 0.67$), with 12.2% spending no time unsupervised and 14.5% spending more than 1.5 hr unsupervised. Although the range in the amount of time spent unsupervised in the community was similarly wide (0–2.63), there was less variation in this time estimate, with 54.6% spending no time out in the community without supervision and only 2.3% spending more than 1.5 hr without supervision in the community. Interestingly, time spent unsupervised out in the community, but not time spent unsupervised in any context, was related significantly and positively to externalizing behavior in all 3 years.

As reported in Pettit et al. (1999), mothers generally rated themselves very high in monitoring ($M = 4.6$, range 3–5), and youth rated their positive involvement with their parents high as well ($M = 3.6$, range 1.6–5). More parental monitoring was associated with less unsupervised after-school time, less unsupervised after-school time in the community, and more positive parental involvement.

Although not reported in the tables, some gender differences in parenting were found and are worth noting. Boys spent significantly more time unsupervised than did girls, $M_s = 0.79$ and 0.62 , $t(402) = 2.62$, $p < .01$, as well as more time unsupervised in the community, $M_s = 0.25$ and 0.16 , $t(402) = 2.22$, $p < .05$. Similarly, mothers of boys reported significantly lower levels of monitoring than mothers of girls, $M_s = 4.54$ and 4.64 , $t(422) = -2.65$, $p < .01$. No differences were found regarding parents' levels of positive involvement with boys compared to girls, $M_s = 3.58$ and 3.61 , $t(391) = -0.40$, *ns*.

Externalizing Behavior—On average, the teacher-rated externalizing behavior scores for each year ($M_s = 6.7$ – 7.9) were below the clinical ranges for both males (cutoff is 23) and females (cutoff is 13), although across the 3 years, 12.0–13.6% of the youths scored in the clinical range for an externalizing disorder. The correlations among the externalizing scores

for each year indicated substantial stability across the ages of 11–13, despite the high likelihood that different teachers rated the youth each year.

Independent and Moderating Effects of Neighborhood Structure

To investigate the independent effects of neighborhood structure on externalizing behavior and the moderating effects of neighborhood structure on relations of gender and parenting processes to youths' initial externalizing behavior levels and growth rates, a three-level model was estimated. Level 1 estimated the growth trajectory of each youth's externalizing behavior score across time. Level 2 estimated individual variations in externalizing levels and trajectories between youths or families within neighborhoods. Youth gender, ethnicity, family structure, and parenting processes were expected to account for significant portions of the variance associated with individual differences in these trajectories. Level 3 considered systematic variations in levels and trajectories of externalizing behaviors between neighborhoods.

The unconditional model (i.e., the model with no predictors) indicated substantial variance between neighborhoods in externalizing behavior across ages 11–13. Specifically, 50.7% of the variation in externalizing behavior was due to within-youth differences (e.g., differences across time), 34.5% was due to between-youth differences (e.g., differences between males and females, or differences in family SES), and 14.8% was due to between neighborhood differences (e.g., differences in residential instability or concentrated affluence). These estimates of intraclass correlation indicate that even though externalizing levels varied considerably within youths (across time) and within neighborhoods, youths in the same neighborhood were substantially more similar in terms of externalizing behavior than were youths in different neighborhoods. This similarity is hypothesized to reflect the common experience of families and youth who live in the same neighborhood. The analyses that follow were designed to identify the characteristics of the neighborhoods that explain this similarity, or in other words, the characteristics of the neighborhood that reflect the shared experiences of the families who live there.

The model building proceeded as follows. At Level 1, linear and quadratic rates of change were estimated for externalizing behavior, then the between-youth differences were modeled on Level 2, and then between-neighborhood differences were modeled at Level 3. With the exception of the age variable, which was centered on age 11, all continuous variables were centered on their grand means; this procedure reduces collinearity among the predictors and facilitates interpretation of the estimated effects (Hox, 1995; Kreft & de Leeuw, 1998). Decisions of whether or not to retain a particular predictor variable in the model were made through a series of nested model comparisons. If the deviance statistic (an indicator of fit) of the model including a predictor was significantly smaller than the deviance statistic of the model excluding that variable, the variable was retained. The model of externalizing behavior that provided the best fit with the data is presented here (see Appendix for the models in equation format). The top section of Table III presents the estimated fixed effects for this analysis, which control for all other variables in the model. The effects on youths' externalizing levels at age 11 (the intercept) are followed by the effects on youths' externalizing growth rates across ages 11–13 (the slope). The bottom section of the table presents the random effects results, which reflect the portions of variance on each level that were not explained by the included predictors.

Effects on Initial Externalizing Levels—The neighborhood structure variables did not independently predict initial levels of externalizing behavior beyond significant individual- and family-level variables. However, concentrated affluence interacted with gender, and residential instability interacted with parental monitoring in the prediction of externalizing behavior levels. Consequently, the main effects of concentrated affluence and residential

instability were estimated (Aiken & West, 1991; Hox, 1995) and are shown in the table to have nonsignificant effects. As shown in Table III, African American ethnicity was associated with significantly more teacher-rated externalizing behavior at age 11, and higher family SES was associated with significantly less. Living in a single-parent household was a statistically significant predictor of initial externalizing levels until the effects of residential instability and concentrated affluence were accounted for; it was retained in the final model because its exclusion significantly degraded model fit.

As predicted, the relations of youth gender and parental monitoring to initial externalizing levels were moderated by neighborhood structure characteristics (see Fig. 1). Specifically, as shown in Table III, being male was associated with higher externalizing behavior at age 11, but this relation was greater in neighborhoods with less concentrated affluence. Similarly, more parental monitoring predicted lower initial externalizing levels in all youths; however, this association was stronger in neighborhoods with more residential instability.

Effects on Externalizing Growth Rates—Parental supervision and positive involvement predicted differences in youths' growth rates of externalizing behaviors from 11 to 13 years of age (see Fig. 2). Specifically, more time spent out in the community unsupervised predicted worsening externalizing behavior across time and more positive parental involvement predicted improvements. Neither effect was moderated by neighborhood structure characteristics. Including a quadratic growth term did not improve the fit of the model.

Random Effects—The variance components listed in the bottom section of Table III reflect the proportion of variance in externalizing behaviors on each level of analysis that was *not* explained by the effects described above. The lack of significance of the variance components on Levels 1 and 2 indicate that the individual, family structure, parenting, and neighborhood structure variables accounted for a substantial amount of the variance associated with initial levels and growth in externalizing behavior. That is, after considering these effects, less within- and between-youth variance remained for externalizing behavior or its change across time. In contrast, the Level 3 variance component corresponding to the effect of ethnicity on mean initial externalizing levels remained statistically significant after the explanatory variables. Factors not accounted for in this paper are needed to explain variance between neighborhoods in the association between ethnicity and mean initial externalizing levels.⁵

DISCUSSION

Research on behavior problem development has shown that parenting and, in less consistent ways, neighborhood factors predict differences in youths' adjustment. This study used longitudinal data to investigate whether or not relations between parenting and the development

⁵The parenting data were collected on three different occasions (and from parents and youths) and so there were many participants for whom we did not have all three parenting indexes ($n = 84$). Because HLM does not permit missing data on Level 2 (where parenting effects were modeled), the sample used in the full model was considerably smaller than the base sample ($N = 356$ vs. $N = 440$). To address this limitation, we ran three independent models for each of the parenting indexes: one for monitoring ($N = 424$), one for supervision ($N = 404$), and one for involvement ($N = 393$). The results supported the general findings of the full-model analysis: (1) there were no independent effects of neighborhood structure on initial externalizing levels, (2) male youths were more affected by neighborhood structure than female youths, and (3) neighborhood structure characteristics moderated the effects of parental monitoring on externalizing development. However, there were also some differences worth noting. According to the parental monitoring model, male adolescents had significantly higher initial externalizing levels in neighborhoods with low concentrated affluence *and* high residential instability, and according to the supervision and involvement models, males were at higher risk only in neighborhoods with high residential instability. Furthermore, low parental monitoring increased risk for higher initial externalizing levels *and* steeper inclines in externalizing growth across time, and the latter effect was moderated by neighborhood structural disadvantage; that is, the effect of monitoring on externalizing growth was significantly stronger in neighborhoods with high levels of disadvantage. In the supervision model, concentrated affluence predicted lower externalizing growth rates *and* moderated the effect of unsupervised time out in the community on externalizing growth rates, such that unsupervised time was associated with significantly steeper inclines in externalizing growth in neighborhoods with low levels of concentrated affluence.

of problem behavior across ages 11–13 depended on particular characteristics of the neighborhoods where families resided. We found that neighborhood structure did not independently relate to youths' externalizing levels and growth rates; rather it played an indirect role in socialization by moderating effects of parental monitoring on externalizing levels. Specifically, the decrease in age 11 externalizing behavior associated with more parental monitoring was significantly more pronounced when youths lived in neighborhoods with more residential instability. We also found residing in neighborhoods with less concentrated affluence was associated with higher externalizing levels for males but not for females. In our estimation these findings constitute both a meaningful replication of prior findings and an interesting extension.

Before discussing the results of this study, however, we acknowledge that they must be interpreted in light of several limitations. First we consider limitations concerning the sample and analysis:

1. Although the method of parameter estimation in HLM (maximum likelihood estimation) provides more power than ordinary least squares regression when there is substantial intraclass correlation in the data (Kreft & de Leeuw, 1998), the sample was relatively small in relation to the number of variables included in the models. As a result, there may have been insufficient power to detect other significant effects.
2. The relatively small number of families per neighborhood (ranging from 1 to 23 with the majority having under 10) resulted in less than optimal within-neighborhood variation. However, the relatively high number of neighborhoods included in the three-level analyses (i.e., $N = 143$) compensates to some degree for the compromise in power due to the small number of families per neighborhood (Kreft & de Leeuw, 1998). Replications of these findings using larger samples with larger concentrations of families from the same neighborhoods are clearly needed.
3. Although the sample contains African Americans, low-SES families, and families living in areas classified by the census as "urban," most participating families were European American, middle-class, and living in less densely populated urban areas (i.e., more similar to suburban areas). Thus, these findings may not generalize to African American youths, socioeconomically disadvantaged youths, and/or families living in more densely populated urban centers.
4. Selective attrition may limit the generalizability of these findings. The three parenting processes (i.e., monitoring, supervision, and involvement) included used data gathered from two respondents on three different occasions. Although this limits method variance, the measurement circumstances raise the likelihood that an individual participant will be missing at least one of the parenting variables, and therefore, be excluded from the full-model analysis, which does not allow for missing data on Level 2. Supplementary models testing associations between neighborhood structure and one parenting process at a time in the prediction of externalizing behavior development generally supported the full-model findings, as described in Footnote 3. However, it is still possible that the missing data biased the results of the full model in a way that cannot be understood.
5. Established empirical links and specific hypotheses drove the analysis, but the model specification process was also partially data-driven. Although a certain amount of indeterminacy is intrinsic to model fitting on the basis of empirical data (Snijders & Bosker, 1999), it is worth noting that these methods may make replication of the findings more challenging.

Next we consider limitations concerning the measure of neighborhood. We chose to use census-based indexes because they are highly objective and well sampled, and their construct validity

is relatively well established (Sampson et al., 1997; White, 1987). However, census tracts may be inconsistent with people's actual perceptions of neighborhood boundaries (Furstenberg, 1993) and they do not necessarily index actual community processes, such as collective efficacy (Furstenberg & Hughes, 1997). Lastly, the fact that families select themselves into neighborhoods is a confound in all studies of neighborhood effects based on survey data (Duncan, Connell, & Klebanov, 1997; Leventhal & Brooks-Gunn, 2000; Tienda, 1991). Unfortunately, studies rarely measure the process by which families select neighborhoods, and so the degree to which selection biases exist is unknown. However, it is notable that neighborhood effects on child risk have been found to persist even after accounting for genetic effects, which may play a role in neighborhood selection (Caspi, Taylor, Moffitt, & Plomin, 2000). Despite these limitations, the study does make important contributions toward the understanding of early adolescent behavior problem development in context.

Parenting and Family Structure Influences

The results of this study are consistent with a large body of research that demonstrates a link between poorer developmental outcomes and "neglectful" parenting (Loeber & Stouthamer-Loeber, 1986), or parenting associated with low family social capital. The present investigation found that less parental monitoring predicted more externalizing behavior and less supervision, and positive involvement predicted more positive growth rates. Interestingly, only unsupervised time while out in the community explained significant portions of the variance in problem behavior, not just general lack of supervision. A possible explanation for this finding is that parents who are more cautious forbid their children from leaving the home when they cannot be supervised, so that the effect of time unsupervised is really the effect of incautious parenting. However, in our sample, there was no correlation between unsupervised time and perceived neighborhood dangerousness, a possible indicator of cautiousness. An alternative explanation is that time spent out in the community unsupervised is associated more strongly with deviant peer contact than is time unsupervised across a range of contexts (Laird et al., 2001; Lansford, Criss, Pettit, Bates, & Dodge, 2001; Pettit et al., 1999). But we did not model peer deviance here and this must be considered speculation.

Consistent with prior research associating higher family SES with lower levels of behavior problems (Conger, Ge, Elder, Lorenz, & Simons, 1994; Dodge et al., 1994; Hanson, McLanahan, & Thompson, 1997), youths from families that were more economically well off had fewer externalizing problems. Inconsistent with prior research investigating relations between ethnicity, neighborhood disadvantage, and antisocial behavior (Peeples & Loeber, 1994), there were ethnic differences in externalizing behavior even after accounting for family SES and neighborhood membership, and this relation remained after considering those influences. However, the increased likelihood of African American youth (vs. White youth) to live in neighborhoods with more structural disadvantage, more instability, and less concentrated affluence (see Table II) draws attention to the difficulty in untangling relations among race and neighborhood.

It is also important to note that by accounting for family SES and ethnicity in the model, we can say that on average the results obtained generalize to families within the SES range and in the ethnic groups represented in the sample. However, because we did not test whether or not relations between neighborhoods, parenting, and problem behavior development differed by family SES or race (three-way interactions), we cannot state with certainty that the relations apply equally well to families of different socioeconomic classes or ethnic backgrounds (see Kupersmidt, Griesler, DeRosier, Patterson, & Davis, 1995).

Neighborhood Influences

In contrast to expectations, no effects of neighborhood structure on growth in externalizing behavior were found; neighborhood structure only indirectly predicted initial levels of externalizing behavior.⁶ Consistent with other research (e.g., Connell et al., 1995), residing in less affluent neighborhoods increased risk for behavior problems for male youths, but not for female youths. It appears that neighborhoods with lower concentrated affluence, which tend to be characterized by fewer social networks among neighborhood residents (Sampson et al., 1999), may put male adolescents at risk for externalizing behavior problems more than females. The additional finding that compared to female youths, males spent significantly more time out in the community unsupervised, provides some direct support for the proposition that males are more likely to be affected by neighborhood resources because they are more likely to participate in neighborhood activities (Ensminger et al., 1996).

In line with, but extending the accumulating evidence of the conditional nature of parenting effects (e.g., Baldwin et al., 1990; Coley & Hoffman, 1996; Collins et al., 2000; Deater-Deckard et al., 1996; Gonzales et al., 1996), we found that residing in a neighborhood with more residential instability was associated with worse behavior problems among adolescents whose parents reported relatively low monitoring, but not among adolescents whose parents reported relatively high monitoring. Pettit et al. (1999) found that the greatest risk for grade 7 externalizing problems was among adolescents living in low-monitoring homes and neighborhoods perceived by parents as unsafe. Both studies identify particular qualities of neighborhoods, that is, perceived dangerousness and residential instability, that affect relations of parenting and adolescent behavior problems. We believe that the current study sheds further light on the processes that may explain these relations. Prior research indicates that neighborhoods where there are fewer long-term residents and fewer homeowners (vs. renters) tend to have less social capital (Sampson et al., 1999), or for example, fewer social ties among adults that may foster the discussion of parenting challenges and provide social support. Our results suggest that living in such neighborhoods places more of a burden on individual parents. The results also imply that parents who tend to monitor less, or have children who tend to disclose less to parents, appear to be the ones who are most in need of the neighborhood resources associated with less residential instability.

Future Directions

To account for the complexity of development in real time, dynamic systems theory “considers not only the simultaneous influence of multiple levels of causality but also takes into account the changing nature of those forces” (Muchisky, Gershkoff-Stowe, Cole, & Thelen, 1996, p. 124). Although prior research has demonstrated considerable stability in parenting across adolescence, there is also evidence of change (Loeber et al., 2000; Paikoff & Brooks-Gunn, 1991). A study of neighborhood effects that includes repeated measurements of both parenting processes and youth outcomes could investigate changes across time in the effects of neighborhoods on parenting, as well as changes across time in independent effects of parenting. For example, as youths grow older, direct adult supervision may play a smaller role in the development of behavior problems whereas monitoring and involvement play larger roles. As monitoring grows more important, resources related to neighborhood-level monitoring may as well. Research that addresses these types of questions may represent the interplay among multiple levels of analysis that better reflects how development really happens.

⁶As described in Footnote 5, in the supplemental models of individual parenting variables, relations of parental monitoring and supervision to externalizing growth rates were moderated by neighborhood structural disadvantage and concentrated affluence, respectively. However, we are not emphasizing these results because they do not simultaneously account for different aspects of parenting, which might account for the additional effects of neighborhood found in the supplemental analyses.

One factor gaining increased recognition as a mediator of the relation between neighborhood and developmental outcomes is the manner in which youths subjectively experience neighborhood qualities (Aneshensel & Sucoff, 1996; Seidman et al., 1998). For instance, Aneshensel and Sucoff (1996) found that adolescents residing in neighborhoods with high residential instability also perceived more “ambient hazards” in their communities, such as crime and violence. Moreover, adolescents’ perceptions of ambient hazards explained almost the entire association between residential instability and a diagnosis of oppositional defiant disorder or conduct disorder (Aneshensel & Sucoff, 1996). Although the present study included only objective indicators of neighborhood, future research might benefit from including in the same model measures of neighborhood that are objective and measures based on youth perceptions.

Future research also might benefit from considering neighborhood effects on the role of peers in externalizing behavior development. Although an abundance of research has considered the influences of parents (e.g., Aseltine, 1995; Galambos & Maggs, 1991) and peers (e.g., Kupersmidt, Burchinal, & Patterson, 1995; Laird, Pettit, Dodge, & Bates, 1999; Scaramella, Conger, Spoth, & Simons, in press) on the development of conduct problems, these effects are rarely considered within the neighborhood context. Pettit et al. (1999) found that unsupervised time *with peers* was a significant risk factor for developing externalizing behavior problems when adolescents resided in low-monitoring homes and in neighborhoods that were perceived to be less safe by parents. Understanding the potentially moderating effects of neighborhood on the relationships among peer relations, parenting behavior, and conduct problems is critical. Finally, future research should aim at understanding better the apparent gender difference in the impact of neighborhood characteristics on behavior problem development, because it might lead to better interventions.

Conclusions

The results of this study have important implications for intervention and prevention efforts. They suggest that structural aspects of neighborhoods, in addition to parenting processes, affect youths’ risk for behavior problems. Because behavior problems often precede and/or co-occur with more serious antisocial and delinquent behaviors (Loeber & Dishion, 1983; Loeber & LeBlanc, 1990) these results may have particular relevance for prevention researchers who target youths most at risk for delinquency. One possible implication for prevention scientists is that programs for families in neighborhoods with relatively high levels of residential instability may want to foster more social networking or cohesion among the neighborhood residents. In conclusion, these findings highlight the importance of addressing family functioning within the neighborhood context when considering the development of youth conduct problems.

Acknowledgments

This research was supported by grants from the National Institute of Mental Health (MH42498) and the National Institute of Child Health and Human Development (HD30572). This study was based on the doctoral dissertation of the first author. We gratefully acknowledge the important contributions to this work of the following: D. Alexander, K. Heller, D. James, L. Scaramella, R. Viken, H. Yoshikawa, and the many individuals in the families and research teams of the Child Development Project.

References

- Aber, J.L. Poverty, violence, and child development: Untangling family and community level effects. In: Nelson, C.A., editor. *Threats to optimal development: Integrating biological, psychological, and social risk factors*, The Minnesota Symposia on Child Psychology. Vol. 27. Hillsdale, NJ: Erlbaum; 1994. p. 229-272.

- Achenbach, TM. Manual for the Teacher's Report Form and 1991 Profile. Burlington, VT: University of Vermont, Department of Psychiatry; 1991.
- Aiken, LS.; West, SG. Multiple regression: Testing and interpreting interaction. Newbury Park, CA: Sage; 1991.
- Aneshensel CS, Sucoff CA. The neighborhood context of adolescent mental health. *Journal of Health and Social Behavior* 1996;37:293–310. [PubMed: 8997886]
- Ary DV, Duncan TE, Biglan A, Metzler CW, Noell JW, Smolkowski K. Development of adolescent problem behavior. *Journal of Abnormal Child Psychology* 1999;27:141–150. [PubMed: 10400060]
- Aseltine RH. A reconsideration of parental and peer influences on adolescent deviance. *Journal of Health and Social Behavior* 1995;36:103–121. [PubMed: 9113137]
- Baldwin, AL.; Baldwin, C.; Cole, RE. Stress-resistant families and stress-resistant children. In: Rolf, J.; Masten, AS.; Cicchetti, D.; Nuechterlein, KH.; Weintraub, S., editors. Risk and protective factors in the development of psychopathology. New York: Cambridge University Press; 1990. p. 257–280.
- Bates JE, Pettit GS, Dodge KA, Ridge B. Interaction of temperamental resistance to control and parenting in the development of externalizing behavior. *Developmental Psychology* 1998;34:982–995. [PubMed: 9779744]
- Bronfenbrenner U. Ecology of the family as a context for human development. *Developmental Psychology* 1986;22:723–742.
- Brooks-Gunn J, Duncan GJ, Klebanov PK, Sealant N. Do neighborhoods influence child and adolescent development? *American Journal of Sociology* 1993;99:353–395.
- Bryk, AS.; Raudenbush, SW. Hierarchical linear models: Applications and data analysis methods. Vol. 1. Newbury Park: Sage; 1992. Advanced quantitative techniques in the social sciences.
- Capaldi, DM.; Patterson, GR. Psychometric properties of fourteen latent constructs from the Oregon Youth Study. New York: Springer; 1989.
- Caspi A, Taylor A, Moffitt TE, Plomin R. Neighborhood deprivation affects children's mental health: Environmental risks identified in a genetic design. *Psychological Science* 2000;11:338–342. [PubMed: 11273396]
- Cheong YF, Raudenbush SW. Measurement and structural models for children's problem behavior. *Psychological Methods* 2002;5:477–495. [PubMed: 11194209]
- Coleman JS. Social capital and the creation of social capital. *American Journal of Sociology* 1988;94 (Suppl):95–120.
- Coley RL, Hoffman LW. Relations of parental supervision and monitoring to children's functioning in various contexts: Moderating effects of families and neighborhoods. *Journal of Applied Developmental Psychology* 1996;17:51–68.
- Collins WA, Maccoby EE, Steinberg L, Hetherington EM, Bornstein M. Contemporary research on parenting: The case for nature and nurture. *American Psychologist* 2000;55:218–232. [PubMed: 10717969]
- Conger RD, Ge X, Elder GH Jr, Lorenz FO, Simons RL. Economic stress, family coercive process, and developmental problems of adolescence. *Child Development* 1994;65:541–561. [PubMed: 8013239]
- Connell JP, Halpern-Felsher BL, Clifford E, Crichlow W, Usinger P. Hanging in there: Behavioral, psychological, and contextual factors affecting whether African American adolescents stay in high school. *Journal of Adolescent Research* 1995;10:41–63.
- Deater-Deckard K, Dodge KA, Bates JE, Pettit GS. Physical discipline among African American and European American mothers: Links to children's externalizing behaviors. *Developmental Psychology* 1996;32:1065–1072.
- Dodge KA, Pettit GS, Bates JE. Socialization mediators of the relation between socioeconomic status and child conduct problems. *Child Development* 1994;65:649–665. [PubMed: 8013245]
- Duncan, GJ.; Connell, JP.; Klebanov, PK. Conceptual and methodological issues in estimating causal effects of neighborhood and family conditions on individual development. In: Brooks-Gunn, J.; Duncan, GJ.; Aber, JL., editors. Neighborhood poverty: Vol. 1. Contexts and consequences for children. New York: Russell Sage Foundation; 1997. p. 219–250.
- Ennett ST, Flewelling RL, Lindrooth RC, Norton EC. School and neighborhood characteristics associated with school rates of alcohol, cigarette, and marijuana use. *Journal of Health and Social Behavior* 1997;38:55–71. [PubMed: 9097508]

- Ensminger ME, Lamkin RP, Jacobson N. School leaving: A longitudinal perspective including neighborhood effects. *Child Development* 1996;67:2400–2416. [PubMed: 9022247]
- Flannery DJ, Williams LL, Vazsonyi AT. Who are they with and what are they doing? Delinquent behavior, substance use, and early adolescents' after school time use. *American Journal of Orthopsychiatry* 1999;69:247–253.
- Forehand R, Miller KS, Dutra R, Chance MW. Role of parenting in adolescent deviant behavior: Replication across and within two ethnic groups. *Journal of Consulting and Clinical Psychology* 1997;65:1036–1041. [PubMed: 9420365]
- Furstenberg, FF. How families manage risk and opportunity in dangerous neighborhoods. In: Wilson, WJ., editor. *Sociology and the public agenda*. Newbury Park, CA: Sage; 1993. p. 231–258.
- Furstenberg, FF.; Hughes, ME. The influence of neighborhoods on children's development: A theoretical perspective and research agenda. In: Brooks-Gunn, J.; Duncan, GJ.; Aber, JL., editors. *Neighborhood poverty: Vol. 2. Policy implications in studying neighborhood*. New York: Russell Sage Foundation; 1997. p. 23–47.
- Galambos NL, Maggs JL. Out-of-school care of young adolescents and self-reported behavior. *Developmental Psychology* 1991;27:644–655.
- Gonzales NA, Cauce AM, Friedman RJ, Mason CA. Family, peer, and neighborhood influences on academic achievement among African-American adolescents: One-year prospective effects. *American Journal of Community Psychology* 1996;24:365–387. [PubMed: 8864209]
- Gorman-Smith D, Tolan PH, Zelli A, Huessman LR. The relation of family functioning to violence among innercity youths. *Journal of Family Psychology* 1996;10:115–129.
- Hanson, TL.; McLanahan, S.; Thompson, E. Economic resources, parental practices, and children's well-being. In: Duncan, GJ.; Brooks-Gunn, J., editors. *Consequences of growing up poor*. New York: Russell Sage Foundation; 1997. p. 190–238.
- Hartman CA, Hox J, Auerbach J, Erol N, Fonseca AC, Mellenbergh GJ, et al. Syndrome dimensions of the Child Behavior Checklist and the Teacher Report Form: A critical empirical evaluation. *Journal of Child Psychology and Psychiatry* 1999;40:1095–1116. [PubMed: 10576539]
- Hollingshead, AB. Four factor index of social status. Yale University; New Haven: 1975. Unpublished manuscript
- Hox, JJ. *Applied multilevel analysis*. Amsterdam: T. T.—Publikaties; 1995.
- Kerr M, Stattin H. What parents know, how they know it, and several forms of adolescent adjustment: Further support for a reinterpretation of monitoring. *Developmental Psychology* 2000;36:366–380. [PubMed: 10830980]
- Klein R, Forehand R. Family processes as resources for African American children exposed to a constellation of sociodemographic risk factors. *Journal of Clinical Child Psychology* 2000;29:53–65. [PubMed: 10693032]
- Kreft, I.; de Leeuw, J. *Introducing multilevel modeling*. London: Sage; 1998.
- Kupersmidt JB, Burchinal M, Patterson CJ. Developmental patterns of childhood peer relations as predictors of externalizing behavior problems. *Development and Psychopathology* 1995;7:825–843.
- Kupersmidt JB, Griesler PC, DeRosier ME, Patterson CJ, Davis PW. Childhood aggression and peer relations in the context of family and neighborhood factors. *Child Development* 1995;66:360–375. [PubMed: 7750371]
- Laird RD, Jordan KY, Dodge KA, Pettit GS, Bates JE. Peer rejection in childhood, involvement with antisocial peers in early adolescence, and the development of externalizing behavior problems. *Development and Psychopathology* 2001;13:337–354. [PubMed: 11393650]
- Laird RD, Pettit GS, Dodge KA, Bates JE. Best friendships, group relationships, and antisocial behavior in early adolescence. *Journal of Early Adolescence* 1999;19:413–437.
- Lansford, JE.; Criss, MM.; Pettit, GS.; Bates, JE.; Dodge, KA. Peer relationships as protective factors in the link between negative parenting and adolescent adjustment: A longitudinal analysis of peer characteristics and relationship qualities. Duke University; 2001. Manuscript submitted for publication
- Leventhal T, Brooks-Gunn J. The neighborhoods they live in: The effects of neighborhood residence on child and adolescent outcomes. *Psychological Bulletin* 2000;126:309–337. [PubMed: 10748645]

- Leventhal, T.; Brooks-Gunn, J. Moving to Opportunity: What about the kids?. In: Goering, J.; Feins, J., editors. *Choosing a better life: Evaluating the Moving to Opportunity Social Experiment*. Washington, DC: The Urban Institute Press; in press
- Loeber R, Dishion TJ. Early predictors of male delinquency: A review. *Psychological Bulletin* 1983;94:68–99. [PubMed: 6353467]
- Loeber R, Drinkwater M, Yin Y, Anderson SJ, Schmidt LC, Crawford A. Stability of family interaction from ages 6 to 18. *Journal of Abnormal Child Psychology* 2000;28:353–369. [PubMed: 10949960]
- Loeber, R.; LeBlanc, M. Toward a developmental criminology. In: Tonry, M.; Morris, N., editors. *Crime and justice: A review of research*. Vol. 12. Chicago: The University of Chicago Press; 1990. p. 375-474.
- Loeber, R.; Stouthamer-Loeber, M. Family factors as correlates and predictors of juvenile conduct problems and delinquency. In: Tonry, M.; Morris, N., editors. *Crime and justice: A review of research*. Vol. 12. Chicago: The University of Chicago Press; 1986. p. 29-149.
- Loeber, R.; Wikström, P-O. Individual pathways to crime in different types of neighborhoods. In: Farrington, DP.; Sampson, RJ.; Wikstrom, P-O., editors. *Integrating individual and ecological aspects of crime*. Stockholm: National Council for Crime Prevention; 1993. p. 169-204.
- Luthar SS, Cushing G. Neighborhood influences and child development: A prospective study on substance abusers' offspring. *Development and Psychopathology* 1999;11:763–784. [PubMed: 10624725]
- McElhaney KB, Allen JP. Autonomy and adolescent social functioning: The moderating effect of risk. *Child Development* 2001;72:220–235. [PubMed: 11280481]
- Muchisky, M.; Gershkoff-Stowe, L.; Cole, E.; Thelen, E. The epigenetic landscape revisited: A dynamic interpretation. In: Rovee-Collier, CK.; Lipsitt, LP., editors. *Advances in infancy research*. Vol. 10. Norwood, NJ: Ablex; 1996. p. 121-159.
- Pagani L, Boulterice B, Vitaro F, Tremblay RE. Effects of poverty on academic failure and delinquency in boys: A change and process model approach. *Journal of Child Psychology and Psychiatry* 1999;40:1209–1219. [PubMed: 10604399]
- Paikoff RL, Brooks-Gunn J. Do parent–child relationships change during puberty? *Psychological Bulletin* 1991;110:47–66. [PubMed: 1891518]
- Peeples F, Loeber R. Do individual factors and neighborhood context explain ethnic differences in juvenile delinquency? *Journal of Quantitative Criminology* 1994;10:141–157.
- Pettit GS, Bates JE, Dodge KA. Supportive parenting, ecological context, and children's adjustment: A seven-year longitudinal study. *Child Development* 1997;68:908–923.
- Pettit GS, Bates JE, Dodge KA, Meece DW. The impact of after-school peer contact on early adolescent externalizing problems is moderated by parental monitoring, perceived neighborhood safety, and prior adjustment. *Child Development* 1999;70:768–778. [PubMed: 10368921]
- Pettit GS, Laird RL, Dodge KA, Bates JE, Criss MM. Antecedents and behavior-problem outcomes of parental monitoring and psychological control in early adolescence. *Child Development* 2001;72:583–598. [PubMed: 11333086]
- Posner JK, Vandell DL. Low income children's after school care: Are there beneficial effects of after school programs? *Child Development* 1994;65:440–456. [PubMed: 8013233]
- Sampson RJ, Groves WB. Community structure and crime: Testing social disorganization theory. *American Journal of Sociology* 1989;94:774–802.
- Sampson RJ, Morenoff JD, Earls F. Beyond social capital: Spatial dynamics of collective efficacy for children. *American Sociological Review* 1999;64:633–660.
- Sampson RJ, Raudenbush SW, Earls F. Neighborhoods and violent crime: A multilevel study of collective efficacy. *Science* 1997;277:918–924. [PubMed: 9252316]
- Scaramella LV, Conger RD, Simons RL. Parental protective influences and gender specific increases in adolescent internalizing and externalizing problems. *Journal of Research on Adolescence* 1999;9:111–141.
- Scaramella LV, Conger RD, Spoth R, Simons RD. Evaluation of a social contextual model of delinquency: A cross-study replication. *Child Development* 2002;73:175–195. [PubMed: 14717251]

- Seidman E, Yoshikawa H, Roberts A, Chesir-Teran D, Allen L, Friedman JL, et al. Structural and experiential neighborhood contexts, developmental stage, and antisocial behavior among adolescents in poverty. *Development and Psychopathology* 1998;10:259–281. [PubMed: 9635224]
- Simons RL, Johnson C, Beaman J, Conger RD, Whitbeck LB. Parents and peer group as mediators of the effect of community structure on adolescent problem behavior. *American Journal of Community Psychology* 1996;24:145–171. [PubMed: 8712184]
- Snijders, TAB.; Bosker, RJ. *Multilevel analysis: An introduction to basic and advanced multilevel modeling*. London: Sage; 1999.
- Stattin H, Kerr M. Parental monitoring: A reinterpretation. *Child Development* 2000;71:1072–1085. [PubMed: 11016567]
- Tienda, M. Poor people and places: Deciphering neighborhood effects on poverty outcomes. In: Huber, J., editor. *Macro-micro linkages in sociology*. Newberry, CA: Sage; 1991. p. 244-262.
- U.S. Bureau of the Census. 1990 Census of Population and Housing: Summary Tape File 3A. Washington, DC: U.S. Department of Commerce, Bureau of the Census; 1990. [CD-ROM]
- U.S. Bureau of the Census. *Geographic areas reference manual*. Washington, DC: U.S. Department of Commerce, Bureau of the Census; 2000.
- White, MJ. *American neighborhoods and residential differentiation*. New York: Russell Sage Foundation; 1987.

APPENDIX

Model of Teacher-Rated Externalizing Behavior

$$Y = \pi_0 + \pi_1(\text{AGE}) + e \quad \text{Level 1}$$

$$\begin{aligned} \pi_0 = & \beta_{00} + \beta_{01}(\text{ETHNICITY}) + \\ & \beta_{02}(\text{SES}) + \beta_{03}(\text{SINGPAR}) + \\ & \beta_{04}(\text{GENDER}) + \\ & \beta_{05}(\text{MONITOR}) + r_0 \\ \pi_1 = & \beta_{10} + \beta_{11}(\text{UNSUPC}) + \\ & \beta_{12}(\text{POSINV}) + r_1 \end{aligned} \quad \text{Level 2}$$

$$\begin{aligned} \beta_{00} = & \gamma_{000} + \gamma_{001}(\text{CONAFF}) + \\ & \gamma_{002}(\text{RESINST}) \\ \beta_{01} = & \gamma_{010} + u_{01} \\ \beta_{02} = & \gamma_{020} \\ \beta_{03} = & \gamma_{030} \\ \beta_{04} = & \gamma_{040} + \gamma_{041}(\text{CONAFF}) \\ \beta_{05} = & \gamma_{050} + \gamma_{051}(\text{RESINST}) \\ \beta_{10} = & \gamma_{100} \\ \beta_{11} = & \gamma_{110} \\ \beta_{12} = & \gamma_{120} \end{aligned} \quad \text{Level 3}$$

where AGE is youth age centered on 11, ETHNICITY is youth ethnicity, SES is family SES, SINGPAR is single-parent status, GENDER is youth gender, MONITOR is level of parental monitoring, UNSUPC is the amount of time the youth was unsupervised and out in the community, POSINV is positive parental involvement, CONAFF is neighborhood concentrated affluence, RESINST is neighborhood residential instability, π_0 is the mean initial

externalizing score for an individual youth, π_1 is the growth rate in externalizing behavior for an individual youth, e is the random child effect at age 11 or the deviation of an individual youth's initial score from the neighborhood mean initial externalizing score, β_{00} is the mean initial externalizing score for one youth in a particular neighborhood, β_{01} is the effect of being African American on mean initial externalizing score for one youth in a particular neighborhood, β_{02} is the effect of family SES on mean initial externalizing behavior for one youth in a particular neighborhood, β_{03} is the effect of single-parent status on mean initial externalizing score for one youth in a particular neighborhood, β_{04} is the effect of being male on mean initial externalizing score for one youth in a particular neighborhood, β_{05} is the effect of parental monitoring on mean initial externalizing score for one youth in a particular neighborhood, r_0 is the random child/family effect or the deviation of an individual youth's mean initial externalizing score from the neighborhood mean initial externalizing score, β_{10} is the growth rate in externalizing behavior for one youth in a particular neighborhood, β_{11} is the effect of unsupervised time out in the community on growth rate in externalizing behavior for an individual youth in a particular neighborhood, β_{12} is the effect of positive parental involvement on growth rate in externalizing behavior for an individual youth in a particular neighborhood, r_{01} is the deviation of an individual youth's growth rate from the mean growth rate for all youths in a particular neighborhood, γ_{000} is the grand mean initial externalizing behavior (i.e., mean across all neighborhoods), γ_{001} is the effect of concentrated affluence in a particular neighborhood on grand mean initial externalizing behavior, γ_{002} is the effect of residential instability in a particular neighborhood on grand mean initial externalizing behavior, γ_{010} is the mean effect of being African American on grand mean initial externalizing behavior, u_0 is the deviation of a particular neighborhood from the mean effect of being African American across neighborhoods, γ_{020} is the mean effect of family SES on grand mean initial externalizing behavior, γ_{030} is the mean effect of single-parent status on grand mean initial externalizing behavior, γ_{040} is the mean effect of being male on grand mean initial externalizing behavior, γ_{041} is the effect of concentrated affluence in a particular neighborhood on the relation between being male and mean initial externalizing behavior, γ_{050} is the mean effect of parental monitoring on grand mean initial externalizing behavior, γ_{051} is the effect of residential instability in a particular neighborhood on the relation between parental monitoring and mean initial externalizing behavior, γ_{100} is the average growth rate in externalizing behavior across neighborhoods, γ_{110} is the mean effect of unsupervised time out in the community on grand mean growth rate, and γ_{120} is the mean effect of parental involvement on growth rate across neighborhoods.

Fig. 1.
The moderating effect of concentrated affluence on the relation between gender and externalizing behavior level and the moderating effect of residential instability on the relation between parental monitoring and externalizing behavior level.

Fig. 2.
The effects of time unsupervised out in the community and positive parental involvement on change in externalizing behavior across ages 11–13.

Table 1
Descriptive Statistics for and Correlations Among Indexes Comprising Neighborhood Constructs ($N = 150$)

Composites and indexes	<i>M</i>	<i>SD</i>	Range	2	3	4	5	6	7	8	9
Residential instability	0.37	0.22	0.03–0.94	.47**	.75**	.74**	.62**	.56**	-.50**	-.25*	-.26*
1. Proportion renter-occupied households	0.54	0.13	0.22–0.93		.12	.09	-.07	-.06	.16	.40**	.33**
2. Proportion households under 5 years											
Structural disadvantage	0.23	0.19	0.00–0.92			.86**	.85**	.74**	-.52**	-.44**	-.46**
3. Proportion female-headed families	0.15	0.14	0.01–0.74				.89**	.77**	.56**	-.49**	-.48**
4. Proportion individuals in poverty	0.08	0.09	0.00–0.52					.77**	-.54**	-.55**	-.56**
5. Proportion households with public assistance	0.04	0.02	0.01–0.10						-.61**	-.60**	-.59**
6. Proportion unemployed											
Concentrated affluence	0.16	0.14	0.00–0.68							.88**	.86**
7. Proportion families incomes >\$75,000	0.24	0.14	0.02–0.60								.96**
8. Proportion individuals with college degrees	0.26	0.12	0.07–0.64								
9. Proportion in professional or managerial positions											

Note. Values in bold are correlations between indexes within composites.

*
 $p < .01$.

**
 $p < .001$ (two-tailed).

Table II

Descriptive Statistics and Correlations Among Variables

Variable	<i>M</i>	<i>SD</i>	Range	Maximum range	2	3	4	5	6	7	8	9	10	11	12	13	14	15
Neighborhood structure																		
1. Residential instability (<i>N</i> = 440)	0.05	1.59	–4.06–5.63	0–3	.47**	–.01	.08	.10	–.18**	.01	.25**	–.20**	–.04	.03	.32**	.17**	.27**	.15*
2. Structural disadvantage (<i>N</i> = 440)	–0.16	3.56	–3.65–14.57	0–3	–.61**	.00	.09	–.22**	–.04	.41**	–.49**	.02	–.02	–.02	.69**	.31**	.38**	.25**
3. Concentrated affluence (<i>N</i> = 440)	0.46	2.99	–4.34–8.10	1–5	.01	–.05	.19	**	.07	–.29	.53	–.03	.08	.08	–.39	–.19	–.27	–.26
Parenting processes																		
4. Avg. hours unsupervised ^a (<i>N</i> = 404)	0.70	0.68	0–3.00	0–3	.50**	–.19	**	–.11	.06	.13	.06	.13	–.01	.13*	–.04	.01	.11	.12
5. Avg. hours unsupervised in community ^a (<i>N</i> = 404)	0.20	0.38	0–2.63	0–3	–.22**	–.07	.01	–.06	.00	.11	.04	.13	.04	.11	.04	.13	.23**	.22**
6. Parental monitoring ^a (<i>N</i> = 424)	4.60	0.37	3–5	1–5	.20**	–.25	.22	**	.20	–.25	.22	**	.00	–.13	–.27	–.26	–.36	–.35**
7. Positive involvement ^b (<i>N</i> = 393)	3.60	0.67	1.60–5	1–5	–.12	.10	–.03	–.02	–.04	.01	–.09	–.14	*					
Family structure/individual characteristics																		
8. Single parent status ^{a,c} (<i>N</i> = 440)	0.29		0–1	0–1	–.32**	–.32**	.01	.40**	.22**	.32**	.28**	.28**	.07	–.41	–.29	–.34	–.30**	
9. Socioeconomic status ^d (<i>N</i> = 440)	39.15	12.81	11–66	8–66									–.06	.08	.06	–.01	.00	
10. Household size ^a (<i>N</i> = 440)	4.16	1.12	2–9															
11. Male gender ^c (<i>N</i> = 440)	0.49		0–1	0–1											–.03	.15**	.13**	.14**
12. African American ethnicity ^c (<i>N</i> = 440)	0.15		0–1	0–1											.36**	.36**	.24**	
TRF externalizing behavior																		
13. Age 11 (<i>N</i> = 416)	7.14	10.71	0–57	0–68													.51**	.45**
14. Age 12 (<i>N</i> = 395)	6.71	9.98	0–53	0–68														.53**
15. Age 13 (<i>N</i> = 373)	7.94	11.74	0–57	0–68														

^aMeasured at age 11.

^bMeasured at age 12.

^cDichotomous variables; means represent proportions of participants.

^dMeasured at ages 11–13 (average).

*
p < .01.

**
p < .001 (two-tailed).

Table III

Three-Level Linear Regression of Teacher-Rated Externalizing Behavior on Family Structure Variables, Parenting Process Variables, and Neighborhood Structure Characteristics

Fixed effects	Coefficient	<i>t</i>	<i>df</i>	<i>p</i>
Level of externalizing behavior at age 11 (intercept)				
Mean level	3.61 (0.53)	0.33	350	.742
Effect of concentrated affluence ^a	0.04 (0.14)			
Effect of residential instability ^a	0.30 (0.24)	1.27	350	.206
Effect of being African American	5.57 (2.11)	2.64	133	.009
Effect of SES ^{a,b}	-0.09 (0.04)	-2.62	350	.009
Effect of living in a single parent family ^c	1.63 (1.05)	1.54	350	.123
Effect of being male	3.38 (0.77)	4.37	350	.001
Effect of concentrated affluence ^a on effect of being male	-0.43 (0.19)	-2.34	350	.020
Effect of parental monitoring ^{a,c}	-3.79 (1.12)	-3.37	350	.001
Effect of residential instability ^a on effect of parental monitoring	-1.94 (0.68)	-2.85	350	.005
Growth rate in externalizing behaviors (slope)				
Mean growth rate ^d	0.28 (0.37)	0.76	353	.448
Effect of time unsupervised and in community ^{a,c}	1.59 (0.75)	2.13	353	.033
Effect of positive parental involvement ^{a,e}	-1.10 (0.34)	-3.19	353	.002
Random effects	Variance component	<i>df</i>	χ^2	<i>p</i> -value
Individual (Level 1)	44.54			
Intercept (Level 2)	23.88	303	103.88	>.50
Slope (Level 2)	13.91	337	203.67	>.50
Intercept/ethnicity (Level 3)	91.05	32	139.26	.001

Note. Numbers in parentheses are standard errors.

^aGrand mean-centered.

^bMeasured at ages 11, 12, 13 (average).

^cMeasured at age 11.

^dCentered on age 11.

^eMeasured at age 12.

^fThe chi-square statistics are based on only the units that had sufficient data for computation, whereas the estimates of the fixed effects and variance components are based on all the data.