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Neighborhood Disadvantage, Parent–Child Conflict, Neighborhood Peer Relationships, and Early Antisocial Behavior Problem Trajectories

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This study examined relations among neighborhood disadvantage, parent–child conflict, deviant peer involvement in the neighborhood, and early-starting antisocial trajectories. Antisocial group patterns were identified in 218 low-income boys followed from ages 5 to 11, and neighborhood and family variables were evaluated as predictors in early and middle childhood. Four trajectory groups emerged: one increasing pattern that corresponded with developmental theories of early-starting antisocial behavior; one with initially high and decreasing problems over time; and two low antisocial groups. Parent–child conflict and neighborhood disadvantage were significantly associated with trajectory patterns, with youth in the 2 higher antisocial behavior groups characterized by more neighborhood problems and parent–child conflict than other groups. The results suggest that in early childhood, neighborhood disadvantage and family conflict place children at risk for early-starting trajectories, and that involvement with deviant peers in the neighborhood takes on an increasingly important role in patterns of antisocial behavior over middle childhood.

KEY WORDS: neighborhood; peers; antisocial behavior; community disadvantage.

Early externalizing problems are one of the best predictors of adolescent and adult criminality (Huesmann & Eron, 1992; Moffitt, Caspi, Harrington, & Milne, 2002). Patterson's (1996) and Moffitt's (1993) well-known taxonomic models regarding the development and course of antisocial behavior (AB) propose that there are a small number of youth who begin engaging in serious AB, such as fighting and stealing, at a young age. These "early-starters" demonstrate relatively high levels of AB before age 12 that persist into adulthood, and are responsible for a large proportion of serious crime and delinquency (Loeber & Farrington, 1998). There is debate regarding the number of distinct developmental patterns in the population (Chung, Hill, Hawkins, Gilchrist, & Nagin, 2002; Tolan, Gorman-Smith, & Loeber, 2000). Recent research has revealed considerable variability in antisocial pathways across late childhood and adolescence (Broidy et al., 1999; Laird & Dodge, 1999). However, there is converging evidence for an early-starting pattern with the initial stages in middle childhood that persists into adulthood (Fergusson, Horwood, & Nagin, 2002; Nagin & Tremblay, 1999). For example, Chung, Hill, et al. (2002) identified five distinct trajectories among low-income youth from ages 13 to 18. The two groups with the highest initial AB at age 13 showed highly stable and increasing patterns over adolescence, and were distinguished from youth with initially high but decreasing AB and from youth with persistently-low antisocial trajectories by prior aggression and substance use from ages 10 to 12. These patterns suggest continuity in risk for children who are engaging in high rates of AB by middle childhood. Investigations that result in the identification of factors that discriminate

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between increasing and decreasing pathways of antisocial behavior (i.e., those factors that either promote or protect from development of early-starting antisocial behavior) have the potential to help researchers understand and ultimately, prevent their occurrence (Shaw, Dishion, Supplee, Gardner, & Arnds, in press; Shaw, Gilliom, Ingoldsby, & Nagin, 2003).

Parent–Child Conflict and Early Antisocial Behavior

Many studies have focused on early parenting in explaining the emergence of externalizing problems in childhood (Campbell, 1995). Parent–child conflict has been identified as a consistently robust childhood predictor of these problems, playing a prominent role in models of early aggression and delinquency (Patterson, Reid, & Dishion, 1992; Scaramella & Leve, 2004). Child aggression is strongly associated with coercive conflict between family members, who model aggressive problem-solving strategies and unwittingly reinforce the child's aggressive responses (Kazdin, 1992; Patterson, Reid, & Dishion, 1992). Several investigations have supported a direct association between parent–child conflict and externalizing problems in the preschool and early school-age years (Shaw, Criss, Schonberg, & Beck, 2004; Snyder, Schrepferman, & St. Peter, 1997; Wasserman, Miller, Pinner, & Jaramillo, 1996). Patterson's early-starter theory posits that "coercive cycles" in these early relationships over time result in continued youth aggression, rejection by prosocial peers, and involvement with deviant peers in later childhood and adolescence. There is evidence that parent–child conflict continues for a large majority of those children who demonstrate high aggression and delinquency in early childhood, perhaps in part serving to maintain and reinforce youth antisocial behavior and consequent problems in later childhood and beyond (Gorman-Smith, Tolan, & Henry, 2000; Shaw et al., 2004). Early parent–child conflict is a strong predictor of the "early starter" pathway, and is associated with antisocial behavior across development (Brennan, Hall, Bor, Najman, & Williams, 2003; Loeber, Farrington, Stouthamer-Loeber, Moffitt, & Caspi, 1998).

Neighborhood Disadvantage and Early Antisocial Behavior

Few studies have investigated associations between neighborhood-based factors and antisocial pathways, particularly during childhood (Shaw et al., 2003). Neighborhood disadvantage has been associated concurrently with externalizing problems, with typically modest associations in childhood and stronger associations emerging consistently in early adolescent samples (Beyers, Bates, Pettit, & Dodge, 2003; Brooks-Gunn, Duncan, Klebanov, & Sealand, 1993; Loeber et al., 1998). How might neighborhood factors be associated with AB pathways? Both structural characteristics (e.g., ethnic composition and socioeconomic factors) and social aspects of the neighborhood (e.g., presence of gangs or deviant peers and perceptions of danger) have been posited as potential factors in the development and maintenance of AB patterns (Seidman et al., 1998). Neighborhoods characterized by economic decline, instability, tension between majority/minority residents, and decreased family resources, are hypothesized to have low levels of collective efficacy (Sampson, Raudenbush, & Earls, 1997). Residents in these neighborhoods feel less trusting toward neighbors, describe lower levels of cohesion and support, and report more parenting challenges (Furstenberg, 1993; Sampson, 1993). Without close social ties, community members are less likely to collectively monitor and act out against criminogenic activities. These conditions allow for greater adult and adolescent aggression and criminal activity, which may model for youth that aggressive problem-solving strategies and delinquent behavior are acceptable and even successful behaviors (Farrell & Bruce, 1997). These conditions also result in youth having greater access to delinquent subcultures (Sampson, 1993; Tolan, Gorman-Smith, & Henry, 2003).

Neighborhood problems have been associated with growth in antisocial behavior over time, but these factors have been investigated primarily in adolescence and involved assessing neighborhood context at one time point. Loeber and Wikstrom (1993, 2000) found that early-starting AB was highest for adolescent boys living in low SES/public housing neighborhood contexts. Chung, Hill, et al. (2002) found that early aggression and neighborhood-level availability of drugs were the only variables among several parent, youth, and ecological factors to uniquely discriminate between high and low antisocial groups in adolescence. In one of the few studies to investigate neighborhood disadvantage in relation to antisocial patterns in early childhood, Xue and colleagues (Xue, Brooks-Gunn, Leventhal, & Earls, 2005) found that low neighborhood collective efficacy predicted growth in AB around age 4, and beginning around age 7, growth was greatly accelerated in neighborhoods low in collective efficacy as compared to lower risk environments. These results suggest that neighborhood disadvantage may be more directly associated with early AB than is previously hypothesized, particularly for children living in the most impoverished contexts (Brooks-Gunn, Duncan, & Aber, 1997 ; Ingoldsby & Shaw, 2002; Winslow & Shaw, 2003).

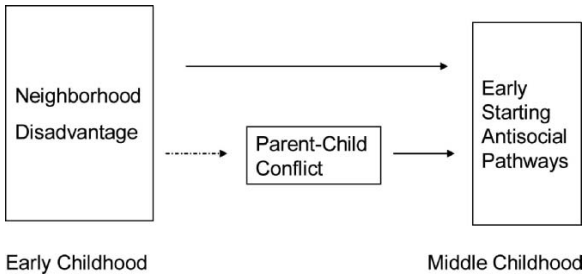

Fig. 1. Hypothesized relations among parent–child conflict and neighborhood disadvantage in early childhood.

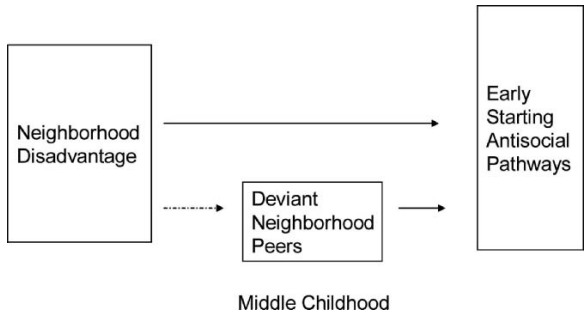

Fig. 2. Hypothesized relations among neighborhood disadvantage, neighborhood peer deviance, and antisocial behavior in middle childhood.

The goals of the present study are to identify trajectory patterns across middle childhood (ages 5–11) and then to investigate whether early neighborhood disadvantage adds to the prediction of early-starting antisocial risk patterns after accounting for the effects of a more proximal family-level factor, parent–child conflict (see Fig. 1).

Neighborhood Deviant Peers and Early Antisocial Behavior

Peer delinquency has been found to be a robust predictor of concurrent youth AB, and to contribute independently to the onset of serious, escalating AB and juvenile offending patterns (Elliott & Menard, 1996; Keenan, Loeber, Zhang, Stouthamer-Loeber, & Van Kammen, 1995; Lacourse, Nagin, Tremblay, Vitaro, & Claes, 2003). During the early school years, child autonomy and independence from their adult caregivers increase, and peer opinions and activities become prominent factors in children's decisions about their behavior, including engaging in AB (DeRosier, Cillessen, Coie, & Dodge, 1994; Steinberg & Silverberg, 1986). Much of the research investigating links between peer factors and AB in middle childhood has focused on same-age, school-based relationships (Parker, Rubin, Price, & DeRosier, 1995). Yet, children may spend unstructured time with older neighborhood peers (Kerr, Stattin, & Trost, 1999; Kiesner et al., 2003; Oberwittler, 2002). Neighborhood research has demonstrated that communities characterized by low collective efficacy and high disadvantage experience greater deviant peer group activity (Sampson, 1993). Brody et al. (2001, 2003) documented that African American adolescents who lived in poor rural communities with low levels of collective efficacy were more likely to be involved with antisocial peers than were youth living in more advantaged areas. In addition, youth who experience high conflict in their homes may be more likely to develop close ties with peers outside the home (Kazdin, 1992; Wahler & Dumas, 1987). In more disadvantaged neighborhoods, the peer groups available to young children may be more likely to be involved in AB, suggesting that neighborhood disadvantage and involvement with deviant peers may combine to predict risk for early-starting pathways over middle childhood (Plybon & Kliewer, 2002). As children begin school, they start to spend more unsupervised time in the neighborhood setting (thus greater exposure to potential neighborhood effects on development) and if their peer groups in this setting are more deviant, neighborhood peer behavior may add to, or help to maintain, early starting AB. However, even in more advantaged contexts, involvement with deviant peers in the neighborhood may still occur (e.g., independent associations may emerge; see Fig. 2).

Methodological Issues

Disentangling neighborhood-based from family level effects is difficult (Aber, 1994). Families may self-select into certain contexts, which can result in spurious relations between neighborhood and AB (Tienda, 1991). It is important to account for variables associated with neighborhood selection (i.e., family poverty) and more proximal effects on AB before attributing effects to neighborhood-based factors. We do so by utilizing a family socioeconomic variable as a covariate and entering the family-level variable in models before neighborhood variables (Duncan, Connell, & Klebanov, 1997). In addition, antisocial pathway patterns across the life span may vary among ethnic groups. For example, earlier onsets and higher "peaks" of delinquency have been found for African American (AA) adolescents compared to European American (EA) adolescents (Elliott, 1994; Farrington, Loeber, Stouthamer-Loeber, & van Kammen, 1996). In addition, as relations between ethnicity and

crime have been confounded with community context (Duncan et al., 1997), we also examine relations between AB and ethnicity. Finally, it is critical to assess neighborhood context with both objective (e.g., census-based) and subjective (e.g., parent perception) measures. Parents may be biased in their ratings of neighborhood quality, yet parents are also influenced in their parenting decisions by perceptions of neighborhood risks (Furstenberg, 1993). In this study, we test models using both maternal ratings of neighborhood problems and a census-based, objectively assessed neighborhood construct.

Study Goals

In this study, we examined the developmental trajectories of AB and whether neighborhood factors and parent–child conflict were associated with different AB trajectories. These issues were studied in a longitudinal sample of urban, low-income EA and AA boys followed from toddlerhood through middle childhood. A person-oriented, latent class trajectory approach was utilized (semi-parametric group mixture modeling [SGM]; Nagin, 1999). On the basis of early-starting pathway theory, we posited the existence of "common types" of antisocial pathways, including a small group of boys with persistently high AB beginning in early childhood ("early starters," Moffitt, 1993; Patterson et al., 1992). We expected the emergence of four groups, consistent with prior analyses (Shaw et al., 2003). We expected at least one group with persistently low AB to emerge, with one or two groups with moderate levels of AB. SGM was used to identify and classify individuals into distinctive, relatively homogenous clusters who shared common pathways (Nagin, 1999). We then examined relations among and mean differences on each variable, across trajectory groups. We expected that in general, boys exhibiting high, early-starting AB would be characterized by the highest level of parent–child conflict, neighborhood disadvantage, and neighborhood problems, with lower or decreasing antisocial groups demonstrating sequentially lower risk scores (i.e., consistent main effects).

These three factors (parent–child conflict, neighborhood disadvantage, and deviant neighborhood peers) are expected to show direct and additive relations to AB over middle childhood. However, we thought that these variables would be associated with AB patterns in varying magnitude in accordance with developmentally based hypotheses. On the basis of prior findings and prevailing theories of early-starting pathways (Patterson et al., 1992; Shaw, Bell, & Gilliom, 2000), we expected that parent–child conflict in early childhood would be moderately to strongly associated with high AB starting around age 5–6 (i.e., related to early-starting, persistent pattern of AB). However, we thought that experiencing significant neighborhood disadvantage and exposure to problems such as violence and disorder during early childhood might add unique variance to the prediction of trajectory patterns, as Xue et al. (2005) found and as demonstrated in adolescent samples (Wikstrom & Loeber, 2000; see Fig. 1). We next investigated these same constructs, assessed from ages 8 to 10, as correlates of AB pathways in middle childhood. We expected that neighborhood disadvantage and family conflict experienced in middle childhood would continue to be significantly associated with trajectory patterns, with neighborhood disadvantage playing a stronger role in middle childhood as exposure to neighborhood settings increases over this developmental period. Yet, we also hypothesized that involvement with an antisocial neighborhood-based friend would emerge as an additional and independent discriminator of early-starting and increasing AB trajectory membership (Ingoldsby & Shaw, 2002; Kiesner et al., 2003; see Fig. 2).

METHOD

Sample

Participants were recruited from the Women, Infant, and Children Nutritional Supplement Program (WIC) centers in the metropolitan Pittsburgh area beginning in 1991. Mothers with sons between the ages of 6 and 17 months of age with another child living in the home were asked to participate in a longitudinal study of child development. Assessments included in the current analyses occurred when the boys were between 2 and 10 years of age. This sample represents a community sample at risk for externalizing problems, as participants are boys (Keenan & Shaw, 1997) and families subsisted below or slightly above the poverty level when recruited (Brooks-Gunn et al., 1997).

The current analyses involved a subset ($n = 218$) of the original sample of 310 boys. Because urban neighborhood disadvantage was of interest in the current study, and urban and rural poverty may relate to family and child functioning in different ways (Brody et al., 2001), families were included in these analyses only if they lived in a 100% urbanized census tract within the county where the study took place. Additional criteria included having participated in at least three of the five data collection time points between ages 5 and 11. Thus, of the

original 310 participants, 92 were not included in these analyses for the following reasons: 25 had dropped out of the study voluntarily by the age-5 assessment (8% of total sample); 17 moved out-of-state (5.5%); 21 did not complete three of the last five assessments (6.7%); and 29 (9.3%) lived outside of Allegheny County for over 1 year of the study. Comparison of mean scores for those participants who were included in the present analyses versus those who had some available data but were not included in the present analyses (i.e., participants living outside the county or state or with several missing data points) demonstrated no significant differences on any study variables (e.g., income, ethnicity, early parent–child conflict), except for lower mean scores on perceived neighborhood problems. This difference was expected, as many of these families had moved to more advantaged suburban neighborhoods. The final sample was evenly divided by EA (49%) and AA (41%) boys, with approximately 9% of bi-racial and 1% of Latino descent. About 52% were from two-caregiver families. By age 6, mothers typically had a high school (35%) or additional education (55%), and 32% worked out of the home. Mean family income was approximately $1,033 per month at recruitment (under the poverty level for a family of four).

The data for these analyses were collected in home assessments at ages 2, 5, 8, and 10, and in laboratory visits at ages 2, 6, and 11. At each visit, mothers were interviewed and completed questionnaires pertaining to their sons' externalizing behaviors, neighborhood, family, peer, and child variables, and interaction tasks were completed and videotaped for later coding. The child reported on peer relationships and AB at the age-10 home assessment.

Measures

Child AB

AB ratings were derived from the Child Behavior Checklist (CBCL; Achenbach, 1992). Mothers completed the age 4–16 version at the age 5, 6, 8, 10, and 11 assessments. Total AB sum scores were formed by selecting 10 items a priori that have been used in other studies of antisocial development (Loeber & Schmaling, 1985; Shaw et al., 2003). Sample items include "gets in many fights," "physically attacks people," "stealing at home/school" [2 items averaged], "lying or cheating;" each rated by mothers as *never*, *sometimes*, or *often* occurring (αs ranged from .80 to .84).

Predictors and Correlates

Family-Level Demographic Risk

Demographic information was collected in an interview at each visit. Family income and highest level of maternal education were standardized, averaged, and reverse-scored to create a demographic risk score from birth to age 6.

Child Ethnicity

As relations between neighborhood and AB may result from variation in contexts experienced by ethnic groups (Peeples & Loeber, 1994), ethnicity (coded 0: EA or 1: AA/other) was included.

Early Childhood Neighborhood Disadvantage

At each visit, mothers reported the duration at their current residence. At age 6, interviewers confirmed all past residences with caregivers. Six U.S. Census variables (1990) were collected for every block group in Allegheny County, including median family income, % families in poverty, % unemployed. Census data from 1990 were utilized because the age 2 through 6 assessments were conducted in the early to mid-1990s. These census variables were chosen as they are considered to be good indicators of neighborhood typology and to be associated with AB (Brooks-Gunn et al., 1997; Loeber & Wikstrom, 1993). Variables were standardized and averaged to form a neighborhood poverty factor ($\alpha = .88$, average interitem $r = .54$; Winslow & Shaw, 2003). Each address provided by participants from ages 2 to age 6 was geocoded to census block-groups and assigned the respective neighborhood poverty factor score. Thus, participant's addresses were assigned a score that is relative to *all* Allegheny county block groups (not just relative to others in the study). As neighborhood context was relatively stable across the 4 years, with inter-correlations among census variables ranging from .71 to .95, $ps < .01$ (Winslow & Shaw, 2005), a summary variable was created by averaging disadvantage scores from the four time points. In prior analyses, the association between neighborhood context and boys' AB was nonlinear, with effects occurring only at the extreme of neighborhood poverty (i.e., >1.5 *SD* above the mean, labeled ''underclass.'' The *neighborhood disadvantage* variable used in the present analyses is a dichotomized variable (underclass vs. nonunderclass),

with the threshold set at the midway point between low SES and underclass neighborhoods demonstrated in prior analyses (Winslow & Shaw, 2005). Of the present sample of 218, 76 (35%) families lived in underclass areas from ages 2 to 6. These families were significantly more likely to be African American (70 of 76) and demonstrate higher sociodemographic risk ($t = -4.43$, $p < .01$).

Perceived Neighborhood Problems

At ages 2, 5, and 8, mothers completed the Neighborhood Questionnaire (Loeber et al., 1998), composed of 17 items assessing problems (e.g., unemployment, abandoned homes). These items are rated on a 3-point scale. Alpha coefficients for the scale were high (.93, .94, .93, respectively). A score reflecting *early childhood neighborhood problems* was created by standardizing and averaging the age-2 and age-5 scores ($r = .61$, $p < .01$). At the age-10 visit, mothers rated 20 similar items from the City Stress Inventory (Ewart & Suchday, 1999) assessing neighborhood violence and disorder ($\alpha = .91$). A *middle childhood neighborhood problems* score was created by standardizing and averaging scores at ages 8 and 10 ($r = .33$, $p < .01$).

Parent–Child Conflict

A multi-informant, multiyear, multi-method strategy was used to create two parent–child conflict composite scores: one for early childhood and another for middle childhood. The following are descriptions of the measures that were used to create these composites. At age 2, maternal parenting was assessed using the Early Parenting Coding System (EPCS; Shaw et al., 1998). A factor score of hostile/rejecting parenting, including molecular and global ratings of verbal/physical approval, hostility, warmth, and punitiveness was created from videotaped mother–child interactions during a structured clean-up task (kappa coefficients ranged from .79 to .94). Also at age 2, the infant version of the Home Observation for Measurement of the Environment (HOME) was administered. The HOME consists of observer ratings and responses to items by parents, has been used in several studies of early childhood development, and demonstrates excellent psychometric properties (Leventhal, Selner-O'Hagan, Brooks-Gunn, Bingenheimer, & Earls, 2004). The parental nurturance score (i.e., sum of acceptance and responsivity factors) was utilized for this composite (Bradley, 1994). At ages 5, 6, 8, and 10, the Adult–Child Relationship Scale (ACRS; revised from the Student–Teacher Relationship Scale, Pianta, 1997) was administered. Mothers rated 15 statements regarding their relationship with their child on a 5-point Likert scale. Items from the conflict scales include "He and I always seem to be struggling with one another," and "This child gets angry at me easily." The age-5 and age-6 conflict scores (11 items each) demonstrated high α coefficients (.80 and .84, respectively). These scores were standardized and averaged for the early childhood composite score. At age 10, observed mother–child conflict was generated from global ratings from a videotaped ''hot-topics'' family discussion task. An overall score was obtained by averaging two factors: (1) mother-to-child conflict, involving the mean of eight ratings including negative humor, complaining, conflict, rejection, nonverbal expressions of disengagement ($\alpha = .85$); and (2) child-to-mother conflict, involving the mean of six ratings including similar conflict-related codes ($\alpha = .85$). Interrater reliability indicators were adequate (Criss & Shaw, in press). Also at age 10, interviewers made post-assessment impression ratings that were rated on a 5-point Likert scale. Nine items assessing mother and child relationship quality (e.g., "this child seemed aloof, distant, or unattached to his mother," "did parent initiate positive physical contact with the child?" were summed, with positive items being reverse-scored first ($\alpha = .81$). From these measures, an *early childhood parent–child conflict* score was created by standardizing and compositing the Hostile/Rejecting observed score (age 2), Parental Nurturance score from the HOME nurturance factor (reverse-scored; age 2), and the Conflict scores from the ACRS (ages 5 and 6). These variables demonstrated significant intercorrelations (rs $=$ .18–.66, $p < .05$). A *middle childhood parent–child conflict score* was created by standardizing and compositing the Conflict scores from the ACRS (ages 8 and 10), the observed parent–child conflict score (age 10), and the interviewer rating of parent–child relationship quality (age 10).

Youth Report of AB

Boys completed a well-used semi-structured interview, the Self-Report of Antisocial Behavior (SRAB; Elliott, Huizinga, & Ageton, 1985) at age-10. This interview asks boys to rate the frequency with which they have engaged in delinquency, substance use, and other offenses. A total AB score was created by summing all 33 items ($\alpha = .78$). The score was transformed using a square root procedure to minimize skewness. This variable is used to examine cross-reporter convergence in antisocial ratings (i.e., to lend validation to results with maternal ratings of AB).

Exposure to Deviant Neighborhood Peers

At age 10, boys rated their neighborhood best friends on 19 AB items based on a 4-point scale. Items were adapted from the SRAB (e.g., "how often has your best friend from the neighborhood: taken something from a store without paying for it?"). A summary score for frequency of best friend AB was computed ($\alpha = .87$). Square-root transformations were computed on these data to minimize skewness and generate a more normal distribution.

Missing Data Considerations

The amount of missing data among study variables ranged from 0 to 22% (neighborhood best friend AB). Therefore, NORM software was used to impute missing values (Schafer, 1997). Results were calculated using one singly imputed dataset, created using an Expectation-Maximization algorithm covariance matrix. Prior research suggests that this method provides unbiased parameter estimates, but may overestimate statistical significance (Graham, Cumsille, & Elek-Fisk, 2002). However, if the proportion of missing values is small, single imputation is a reasonable and preferred alternative to listwise deletion (Schafer, 1997).

RESULTS

Correlations Among Study Variables

Pearson's product–moment correlations were computed among study variables. Table I includes means, standard deviations, and correlations. Maternal reports of AB over the 6 years were moderately correlated (rs $= .40$–$.66$, $p < .01$). Additionally, boys' ratings of their own AB at age 10 were modestly to moderately correlated with maternal ratings (rs ranged from .25 to .43, $p < .01$), suggesting some cross-informant convergence. Maternal ratings of AB were modestly related to demographic risk, neighborhood disadvantage indicators, and best friend AB, but demonstrated moderate correlations with parent–child conflict. Correlations among AB ratings (except boys' self-report) and early risk and correlate variables were all in the predicted direction, and most attained statistical significance. Small to moderate associations emerged among early and middle childhood contextual risk variables. The largest correlations were demonstrated within constructs ($r = .48$, for perceived neighborhood problems early and middle childhood composites; $r = .64$, between the early and middle childhood parent–child conflict composites, both significant at $p < .01$). The parent–child conflict composite variables were most consistently related to other study variables.

Mothers' mean ratings on perceived neighborhood problems were examined across the two neighborhood disadvantage groups to investigate cross-method convergence in the neighborhood construct. Maternal ratings were significantly different between families living in non-underclass and underclass neighborhoods on the early childhood composite ($-.28$ vs. $.53$, $t = 6.64$, $p < .01$) and the middle childhood composite ($-.16$ vs. $.30$, $t = 3.94$, $p < .01$). The point-biserial correlation between neighborhood problems and the dichotomous neighborhood disadvantage variable was .42, $p < .01$, suggesting that maternal ratings were generally consistent with an objective assessment of neighborhood disadvantage.

Developmental Trajectory Groups of Antisocial Behavior Using a Person-Oriented Approach

To examine the patterns of growth of AB, semi-parametric group mixture modeling (SGM) was applied utilizing maternal ratings of AB. This method uses mixtures of defined probability distributions to distinguish distinct, relatively homogeneous groups of trajectories in a population (Nagin, 1999). To determine optimal trajectory patterns, quadratic and linear models with three, four, and five groups were estimated. The Bayesian Information Criterion (BIC) has been recommended as the basis for selecting the best model fit for the number of trajectory groups (Jones, Nagin, & Roeder, 2001; Nagin, 1999). The four group model was favored according to this criteria, with linear trajectories (BIC $= -2159.98$, as compared to -2156.55 for five groups, and -2179.73 for three groups). The estimated groups corresponded well to hypothesized groups: (1) a group with very low, stable levels ($n = 49$, 23%, low/stable); (2) a group with low initial and decreasing problems ($n = 124$, 55%, low/decreasing); (3) a group with high initial problems that gradually decrease over time ($n = 29$, 14.4%, high/decreasing); and (4) a group with moderate initial problems that increases in AB from ages 2 to 11 ($n = 16$, 7.3%, moderate/increasing, see Fig. 3). Even though the high/decreasing group demonstrated higher initial AB at age 5 than the moderate/increasing group, the latter pattern was consistent with the persistent pattern described by early-starter theory (Moffitt, 1993; Patterson et al., 1992). Thus, we refer to this group as "early-starters" below. All slopes were significantly different from zero.

After trajectory groups were identified, it was possible to examine whether constructs assessed in early

Table I. Means, Standard Deviations, and Correlations Among Study Variables

	Mean	*SD*	1	2	3	4	5	6
Covariates								
1. Family demographic risk	0.05	0.76	—					
Early childhood predictors (ages 2—6)								
2. Perceived NBH problems (Mat. ratings)	0.10	0.94	.26	—				
3. Parent—child conflict (composite)	0.05	0.76	.28	.24	—			
Middle childhood correlates (ages 8—10)								
4. Perceived NBH problems (Mat. ratings)	0.04	0.85	.24	.48	.23	—		
5. NBH best friend antisocial (youth report)	1.38	1.18	.10	.17	.12	.14	—	
6. Parent–child conflict (composite)	0.03	0.71	.22	.12	.64	.11	.11	—
Maternal ratings of AB								
7. CBCL age 5	3.77	3.09	.13	.10	.58	.18	.13	.43
8. CBCL age 6	3.46	2.88	.18	.18	.55	.20	.11	.50
9. CBCL age 8	2.73	2.92	.02	.20	.40	.21	.13	.40
10. CBCL age 10	2.67	2.81	.09	.19	.43	.25	.26	.55
11. CBCL age 11	1.92	2.57	.14	.11	.40	.25	.22	.49
Youth self-report of AB								
12. YSR age 10	0.29	0.19	.09	.03	.24	.13	.40	.33

Note. $r > .10$, $p < .10$; $r > .12$, $p < .05$; $r > .16$, $p < .01$. NBH = neighborhood, Mat. = maternal.

childhood (prior to age 6) and middle childhood (ages 8–11) varied across groups. Individuals were assigned to groups according to posterior probability scores. To investigate the fit, the averages of scores used to assign group membership were examined. Within each assigned group, the average probability scores ranged from .73 to .92. These averages are consistent with good fitting trajectory groups (Lacourse et al., 2003).

Mean Differences in Risks and Correlates Across Trajectory Groups

ANCOVAs were then computed separately for each study variable to examine mean differences across groups (see Table II). Although the early-starting increasing group largely consisted of boys from African American or other ethnic minority descent (75%), results of an ANOVA indicated that ethnicity was not significantly associated with group membership. We did not include ethnicity in the ANCOVA analyses, but did include ethnicity in regression analyses because of the association between ethnicity and neighborhood disadvantage. Family demographic risk was associated with group membership; thus this variable was included in all further analyses as a covariate.

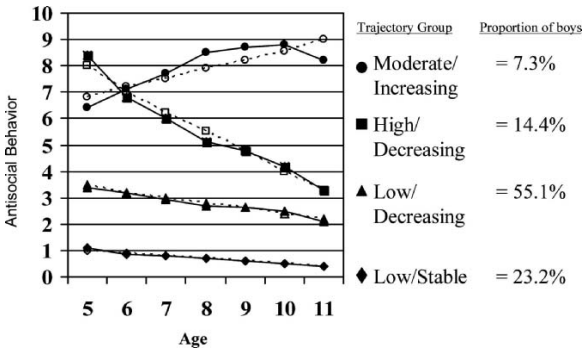

Fig. 3. Predicted and actual antisocial trajectory groups based on SGM analyses. *Note. Solid lines* indicate observed trajectories; *dotted lines* expected observed trajectories.

As described earlier, constructs were divided by early childhood predictor variables (composite scores for ages 2–6), and middle childhood correlates (across ages 8–10). Early childhood parent–child conflict and neighborhood disadvantage constructs demonstrated significant mean differences across the four trajectory groups, at least at the $p < .05$ level. As expected, the early-starting moderate-increasing trajectory group had the highest mean scores on both parent–child conflict and neighborhood problems. For demographic risk, the high/decreasing group showed a slightly higher but nonsignificant score when compared to the early-starter increasing group. Of note is the significantly large proportion of boys in the moderate increasing group who experienced prolonged residence in underclass neighborhoods (55% vs. 45% in non-underclass areas). The early starting increasing group and the high/decreasing group showed larger, statistically significant differences in relation to the two lower antisocial groups, but not when compared to one another. Mothers of boys in the low antisocial group reported their neighborhoods as having fewer problems during early childhood

Table II. Estimated Marginal Mean Differences Based on SGM Probability Antisocial Groups, in ANCOVAs with Family Demographic Risk as Covariate

	Antisocial trajectory groups ages 5–10					
Study variables	1. Low/stable (n = 49)	2. Low/decreasing (n = 124)	3. High/decreasing (n = 29)	4. Moderate/increasing (n = 16)	F	Significant group differences[a]
Covariates						
Family demographic risk	2.63	2.87	3.23	3.10	3.90**	4 > 1; 3 > 1, 2
Ethnicity (n)						
EA	28	62	24	4		
AA/other	21	62	15	12		
Early childhood predictors (ages 2–6)						
Perceived NBH problems (Mat.)	− 0.23	0.02	0.30	0.39	3.10*	4 > 1; 3 > 1
NBH disadvantage (n; census)						
Nonunderclass	38	81	16	7	χ^2 = 7.81*	
Underclass	11[b]	43	13	9[c]		
Parent–child conflict (composite)	− 0.58	0.01	0.65	0.74	31.50**	4 > 1, 2; 3 > 1, 2; 2 > 1
Middle childhood correlates (ages 8–10):						
Perceived NBH problems (Mat.)	− 0.30	− 0.02	0.33	0.54	6.22**	4 > 1, 2; 3 > 1, 2; 2 > 1
NBH best friend antisocial (youth)	− 0.18	− 0.10	0.15	1.08	5.53*	4 > 1, 2, 3
Parent–child conflict (composite)	− 0.54	0.01	0.50	0.85	31.81**	4 > 1, 2; 3 > 1, 2; 2 > 1
Youth report of AB						
Self-report AB	− 0.07	− 0.01	0.06	0.25	15.93**	4 > 1, 2; 3 > 1, 2; 2 > 1

Note. NBH = neighborhood; Mat. = maternal ratings.
[a]Means are significantly different at the $p < .05$ level using Fisher LSD test.
[b]Count is significantly less than expected at the $p < .05$ level.
[c]Count is significantly greater than expected at the $p < .05$ level.
*$p < .05$. **$p < .01$.

compared to the two groups with initially higher AB (d = .62–.72). We were especially interested in the differences between Group 3 (high/decreasing) and Group 4 (moderate/increasing), as these boys were engaging in approximately the same level of elevated AB at age 5, but Group 3 decreased whereas Group 4 increased over middle childhood. In terms of early childhood predictors, these groups were generally similar in terms of perceived neighborhood problems, the extent to which they lived in underclass neighborhoods, and levels of early parent–child conflict.

For middle childhood correlates of AB patterns, neighborhood problems and parent–child conflict continued to be the highest among those children in the early-starting increasing group. As seen with the early childhood constructs, middle childhood correlates were associated with group membership in a linear fashion; the mean scores were larger as the groups included more persistent AB (from Groups 1 to 4). In some comparisons, effect sizes were quite large (e.g., for parent–child conflict, d = 1.0–1.5). Larger differences were found between the early starting and high/decreasing groups for the middle childhood correlates as compared to the early childhood constructs, although only the neighborhood best friend antisocial rating attained statistical significance, for which the difference was large (d = .75). Boys in the early starting increasing AB group reported much higher rates of antisocial behavior in their neighborhood-based best friend than those boys in the group that decreased over time. The finding for peer AB is noteworthy, as these analyses involved multiple informants (mothers reporting on AB and boys reporting on peer deviance) and are not subject to reporter bias.

Neighborhood, Peer, and Parent–Child Predictors of Group Membership

The next step was to evaluate how parent–child conflict, neighborhood disadvantage (in early and middle

childhood), and neighborhood best friend deviance (in middle childhood) predicted AB patterns. To test this, we performed a series of binary and multinomial logistic regressions. Binary, as compared to multinomial, logistic regressions were computed when we were testing the predictive power of variables entered at individual steps in differentiating membership across two particular groups. Wald tests were examined to determine significance in odds ratios for membership in one group versus another (Tabachnick & Fidell, 2001). Because the trajectory analyses resulted in two groups with relatively low AB (Groups 1 and 2), and our main interest was in attempting to isolate predictors of membership in the early starting increasing group (Group 4) versus low antisocial groups, we aggregated Groups 1 and 2 for these analyses. We then tested our hypothesized models by predicting membership in Group 4 vs. Groups 1 and 2 combined. In addition, because our SGM trajectory analyses resulted in a best-fitting model with a decreasing antisocial group (Group 3) and an increasing antisocial group (Group 4), we were interested in identifying variables that may be differentially associated with increasing trajectories (predictors of risk) versus decreasing trajectories (predictors of desistance) over middle childhood. Thus, we tested the same models comparing Group 3 (high/decreasing) versus Groups 1 and 2 (combined), and separate models testing Group 4 versus Group 3. However, given the relatively small sample sizes of Groups 3 and 4 and the number of predictor variables that we could reliably enter into the equations, in this last set of analyses we only tested additive effects of limited sets of predictors and results should be interpreted with caution.

Early Childhood Predictors of Middle Childhood Pathways

Our first model (see Table III) tests the predictive power of early parent–child conflict and early neighborhood problems, after controlling for family demographic risk and ethnicity, in predicting group membership patterns. Multinomial regression tested the full model with two simultaneous group comparisons, therefore reducing the risk of Type I error (Tabachnick & Fidell, 2001). As expected, early parent–child conflict was highly predictive of membership in the early-starting group versus the two low antisocial groups, with a sixfold increase in odds associated with parent–child conflict ($p < .01$). Maternal perceptions of early neighborhood problems were not significantly associated with group membership in the final model, although the odds ratio (1.46) was in the hypothesized direction. In examining predictors of low antisocial groups (Groups 1 and 2) versus those who started higher but decreased over time (Group 3), parent–child conflict (odds ratio = 6.01) and neighborhood problems (odds ratio = 1.69) were significantly associated with group membership. The similar pattern and magnitude of the associated odds ratios for Group 3 and Group 4 as compared to the combined low AB groups suggests that the significant early childhood variables are stronger predictors of the initial level of AB at ages 5–6, rather than growth patterns over time. Finally, in comparing Groups 3 (decreasing) and Group 4 (increasing) in relation to early parent–child conflict and neighborhood problems (see Table V), a similar pattern emerged as in the prior models tested (with increased odds based upon

Table III. Multinomial Logistic Regression Predicting Membership in Trajectory Groups (exp[*B*]) in Early Childhood

	Group 4 vs. Groups 1 and 2		Group 3 vs. Groups 1 and 2	
	B	exp[*B*]	*B*	exp[*B*]
Intercept	−2.91**		−2.99**	
Family demographic risk	−0.08	0.92	0.42	1.52
Ethnicity[a]	−0.33	0.72	1.07+	2.93
Parent–child conflict (ages 2–6)[b]	1.86**	6.41	1.79**	6.01
NBH problems (ages 2–5)[a]	0.38	1.46	0.53*	1.69
Neighborhood disadvantage (ages 2–6)	0.16	1.17	0.17	1.19
Model overall 2 log likelihood	217.42**			
Model overall chi-square (*df*)	63.15 (10)**			

Note. Groups 1 and 2 are combined and serve as the reference group. NBH: neighborhood.
[a]Classification was improved significantly with entry of variable at step at $p < .10$.
[b]Classification was improved significantly with entry of variable at step at $p < .05$.
*$p < .05$. **$p < .01$. +$p < .10$.

ethnicity, conflict, and neighborhood disadvantage), but none of the predictors was significantly associated with group membership.

Middle Childhood Correlates of Trajectory Patterns

Our next goal was to investigate whether middle childhood neighborhood variables (neighborhood disadvantage and neighborhood best friend AB) were associated with incremental discrimination of trajectory group membership beyond that accounted for by early childhood predictors and parent–child conflict in middle childhood. To test this, we first computed a multinomial logistic regression model that tested comparisons between the combined low AB groups (reference group) and Group 4 and Group 3 (see Table IV). Group 3 and Group 4 comparisons demonstrated very similar patterns, with generally smaller differences (but almost identical significance pattern) between Group 3 and the low AB groups than for Group 4. In general, parent–child conflict was the strongest discriminating construct, with approximately at five- to sixfold increase in odds associated with early childhood parent–child conflict, and a three to fourfold increase in odds associated with middle childhood conflict. Neighborhood disadvantage and problems in early childhood were not significant in discriminating group membership, but neighborhood problems in middle childhood approached significance for both groups. Neighborhood peer AB also contributed significantly in the expected direction in the comparison between Groups 1 and 2 versus Group 4 (early starters), but not for Group 3 (high/decreasers). After accounting for early childhood predictors, parent–child conflict and neighborhood disadvantage in middle childhood, those boys in the early-starter antisocial group were twice as likely to have an antisocial best friend in the neighborhood than those in the two low AB trajectory groups. We then tested predictors of membership in the early starting increasing (Group 4) versus decreasing (Group 3) groups in a binary logistic regression. Given the small size of these groups, only small sets of variables could be reliably tested simultaneously (see Table V). Model 1 indicates that parent–child conflict and neighborhood problems in early childhood do not differentiate Groups 3 and 4. Model 2 demonstrates that ethnicity and parent–child conflict in middle childhood distinguish these two groups at a trend level, and that neighborhood problems do not significantly distinguish the groups. In Model 3, neighborhood problems are removed and replaced with neighborhood best friend AB. Interestingly, neighborhood peer deviance was the only factor to distinguish significantly between the increasing and decreasing antisocial trajectory groups over middle childhood after accounting for concurrent parent–child conflict, and this was the only model to attain statistical significance ($\chi^2 = 11.40, p < .05$).

DISCUSSION

The current study identified patterns of early-starting AB trajectories, and tested hypotheses relating neighborhood variables and parent–child conflict to group patterns of AB from early to middle childhood. Using a person-oriented group trajectory analysis (Nagin, 1999), four

Table IV. Multinomial Logistic Regression Predicting Membership in Trajectory Groups (exp[*B*]) in Middle Childhood

	Group 4 vs. Groups 1 and 2		Group 3 vs. Groups 1 and 2	
	B	exp[*B*]	*B*	exp[*B*]
Intercept	−3.67**		−3.13**	
Family demographic risk	−0.30	0.74	0.35	1.42
Ethnicity[a]	−0.00	1.00	1.28*	3.61
Parent–child conflict (ages 2–6)[b]	1.82*	6.19	1.69**	5.39
NBH problems (ages 2–5)	0.06	1.06	0.26	1.30
NBH disadvantage (ages 2–6)	0.17	1.19	0.04	1.04
Parent–child conflict (ages 8–10)[b]	1.32*	3.75	0.99*	2.69
NBH problems (ages 8–10)[a]	0.68+	1.98	0.52+	1.68
NBH peer antisocial (age 10)[b]	0.71**	2.02	0.18	1.19
Model overall 2 log likelihood	195.70**			
Model overall chi-square (*df*)	84.87 (16)**			

Note. Groups 1 and 2 are combined and serve as the reference group. NBH: neighborhood.
[a]Classification was improved significantly with entry of variable at step at $p < .10$.
[b]Classification was improved significantly with entry of variable at step at $p < .05$.
*$p < .05$.**$p < .01$.+$p < .10$.

Table V. Hierarchical Logistic Regression Predicting Membership (exp[*B*]) in Decreasing (Group 3) Versus Increasing (Group 4) Groups with Select Early and Middle Childhood Predictors

	Group 3 vs. Group 4					
	Model 1		Model 2		Model 3	
Predictor variables	*B*	exp[*B*]	*B*	exp[*B*]	*B*	exp[*B*]
Step 1						
Family demo risk	−0.36	0.70	−0.40	.67	−0.58	0.56
Ethnicity	−1.18	0.31	−1.34^{+}	.26	−1.15	0.32
Step 2						
P-C conflict[a] (ages 2–6)	0.02	1.02	0.99^{+}	2.70	1.10$^{+(c)}$	2.99
Step 3						
NBH problems[b] (ages 2–5)	−0.02	0.98	0.15	1.17	0.59$^{*(d)}$	1.81
Model overall 2 log likelihood	55.38		51.67		47.16	
Model overall chi-square (*df*)	3.19 (4), *ns*		6.90 (4), *ns*		11.40 (4)*	
Classification from first to last step (%)	64.4–66.7		64.4–73.3		64.4–78	

Note. P-C: parent–child; NBH: neighborhood; AB:
[a]Model 1: ages 2–6; Models 2 and 3: ages 8–10.
[b]Model 1: ages 2–5; Model 2: ages 8–10; Model 3: peer antisocial behavior.
[c]Classification was improved significantly with entry of variable at step at $p < .10$.
[d]Classification was improved significantly with entry of variable at step at $p < .05$.
$^{*}p < .05$. $^{**}p < .01$. $^{+}p < .10$.

patterns of AB behavior emerged from ages 5 to 11, with the expected small number of boys showing an increasing pattern of AB ("early starters"; Patterson, Shaw, Snyder, & Yoerger, 2001). Overall, neighborhood and family variables demonstrated significant differences across trajectory groups as hypothesized. A consistent pattern emerged in which the early starter group and the group with initially high but decreasing AB over time demonstrated significantly higher risk scores of similar magnitude, with lower mean scores for the two low-AB groups. When tested together in an additive model, parent–child conflict in early childhood was associated with increased likelihood of membership in the two high antisocial groups, and early neighborhood problems added independent variance in comparison to the low AB groups, but did not always attain significance. The findings lend support to the hypothesized model (Fig. 1). However, these early childhood contextual variables appeared to be better indicators of initial levels of AB at school-entry age (ages 5–6) than of patterns of growth or desistance in middle childhood.

In middle childhood, neighborhood disadvantage and parent–child conflict continued to be differentially associated with high versus low AB trajectories, but the only variable to uniquely discriminate the early starting youth from high/decreasing youth in middle childhood was neighborhood peer antisocial behavior at age 10. Relations in middle childhood were generally consistent with the additive model in Fig. 2. The results support the notion that early parent–child conflict, and to a lesser degree, neighborhood disadvantage, may contribute to the development of AB problems when children enter school, but that developing deviant peer relationships may be a factor that maintains and even exacerbates early starting AB over time (Keenan et al., 1995). The study improves upon prior research by identifying patterns of AB in childhood (truly early AB) in a diverse sample, and incorporating neighborhood factors in predicting AB pathways. These results are notable because multiple informants (maternal ratings, youth ratings, census-based data) and multi-method constructs across time were used. Together, the findings highlight the importance of early ecological and family relationship risks in the onset and course of AB prior to adolescence, and extend our knowledge of unique factors that may facilitate or reduce escalations in emerging antisocial problems at different points of development.

Developmental Trajectories of Early-Starting AB

Study results showed that the developmental course of AB varied across ages 5–11 in an urban, primarily low-income sample of boys. The SGM analyses revealed

distinct group configurations of boys' AB that were consistent with prevailing theories of developmental patterns (Broidy et al., 2003; Farrington et al., 1990). For most boys, antisocial problems were relatively infrequent and stable, consistent with other longitudinal studies (Aber, Brown, & Jones, 2003; Stanger, Achenbach, & Verhulst, 1997). There was a small group of boys for which AB was high at age 5 and declined gradually by age 11. For another small group, AB was found to increase from age 5 to 11, consistent with early starter AB theory. Notably, the percentage of boys in these groups was consistent with those found in research on school-age children (i.e., around 6–10%; Fergusson et al., 2000; Loeber et al., 1998; Moffitt, 1993; Patterson et al., 1992).

Although it is difficult to predict the stability of AB for these boys as they enter adolescence, others have found that these youth will be likely to remain engaged in serious AB throughout adolescence (Broidy et al., 2003; Moffitt et al., 2002). The current study fills some important holes in the developmental literature by detailing the emergence and course of AB from early through middle childhood, as most investigations involve older youth (Lacourse et al., 2003; Loeber et al., 1998). We assessed AB beginning at age 5 because this was the age at which covert types of AB could first be assessed reliably (Loeber & Schmaling, 1985; Willoughby, Kupersmidt, & Bryant, 2001). This starting point also allowed us to examine AB patterns during the transition to school, a period associated with a number of critical contextual changes in children's lives. Children begin to spend less time with parents and more time with peers, and have more interaction with neighborhood members and settings (Kiesner et al., 2003). Interestingly, we found that the two group patterns with high levels of AB at age 5 differed on levels of AB at age 6, with higher AB for the decreasing group at first, but comparable rates at age 6, and significant divergence following age 6. This pattern supports the notion that among children with elevated conduct problems entering school, factors associated with this transition may have significant ramifications for whether youth continue or desist in their problem behaviors. We were most interested in investigating relations between critical but relatively untested factors that are implicated in theories of early starting AB (i.e., neighborhood-based risks). However, given that age 6–7 appears to be an important age at which tendencies for AB patterns may become "set," future investigations including variables that are more proximally related to the school transition, such as teacher–student relationships in the early school years and parental involvement, may contribute to our understanding of how AB patterns emerge and are maintained.

Early Childhood Predictors of Antisocial Pathways in Middle Childhood

As hypothesized, early-starting antisocial boys were characterized by significantly higher levels of parent–child conflict in early childhood (Patterson et al., 1992; Scaramella & Leve, 2004). Early parent–child conflict was expected to play an important role in the development of high rates of AB, as aversive family conflict models and reinforces antisocial interaction strategies. In fact, our multi-method and multi-informant composite of parent–child conflict was consistently associated with more chronic and serious trajectories of AB. Effect sizes for early parent–child conflict were large ($d = 1$–1.5), with a sixfold increase in the probability of being in the early starting or the high/decreasing group as conflict increased.

Early neighborhood disadvantage also was related to group patterns, although to a lesser extent. A larger percentage of early starting antisocial boys lived in extremely impoverished environments over early childhood (54%) as compared to lower AB groups (23–45%). In regression analyses, neighborhood problems differentiated the high/decreasing boys from the low AB groups, with an approximately twofold increased risk as neighborhood problems increased. We expected that early neighborhood problems would be differentially associated with early starters versus other groups; this was not evidenced. With family socioeconomic status, ethnicity, and family conflict statistically controlled, neighborhood risks were not uniquely associated with early starting trajectories. This may have resulted from the relatively small size of the early starter group (i.e., power to detect differences was restricted), or suggest that risks associated with the early starting group such as family conflict, may be so high already that neighborhood disadvantage does not have an additional impact on early starting AB. Because variables were constructed to reflect the level of neighborhood problems families experienced over time, these results are also consistent with the notion that neighborhood disadvantage may have a cumulative effect on the development of early AB, particularly up to the school age (McLeod & Shanahan, 1996). From these analyses and the study's design, it is not possible to determine the mechanisms of effect. Nonetheless, these findings are consistent with the idea that the negative effects associated with neighborhood disadvantage compound over time, perhaps by increasing stress, further heightening family conflict, and compromising parenting practices (Gorman-Smith et al., 2000). Some researchers have posited that neighborhood-based variables are not directly associated with serious AB until early adolescence (Brooks-Gunn et al., 1993;

Moffitt, 1993). The current results suggest that neighborhood-based factors may play a more pivotal role in the initiation and progression of AB beginning around age 5, at least for boys living in urban environments (Winslow & Shaw, 2005; Xue et al., 2005).

Middle Childhood Correlates of Antisocial Pathways

A primary hypothesis was that parent–child and neighborhood risks would continue to relate to AB patterns during middle childhood, but that neighborhood-based peer AB would also emerge as a factor in the early-starting pathway (Fig. 2). This hypothesis was supported. Somewhat different patterns of variables emerged in comparisons. Boys with an initially high/decreasing pattern were differentiated from the lower antisocial groups by higher early parent–child conflict, minority status, and higher parent–child conflict and a trend toward greater neighborhood problems in middle childhood. In comparing the early starter boys with lower antisocial groups in terms of unique predictors, parent–child conflict during both early and later developmental periods, and having a neighborhood-based antisocial best friend discriminated group status. The effects for family variables were large (e.g., four- and sixfold increases). These results suggest that early parent–child conflict is a particularly strong and consistent experience for children who engage in high levels of AB during middle childhood. Yet, parent–child conflict was not a unique indicator of early starting/increasing AB. Overall, these findings suggest that early parent–child conflict and neighborhood disadvantage may be important indicators of risk for higher AB, particularly in risk at around school entry age. However, these early childhood factors appear to more strongly discriminate between lower and moderate risk (i.e., decreasing) patterns.

Neighborhood best friend AB emerged as the only unique predictor differentiating early starting/increasing from high/decreasing AB patterns (odds ratio $= 2.02$), after accounting for other early context variables. During middle childhood, having a best friend who engages in AB appears to be a distinguishing feature of growth in boys' antisocial behavior. Neighborhood peer relationships were assessed at age 10. Although other studies have shown that peer deviance is an important predictor of AB, most studies have investigated same-age, school-based friendships, and have primarily involved older youth (Poulin, Dishion, & Hass, 1999). Very few studies have investigated neighborhood-based peer relations. These findings provide support for the notion that involvement with neighborhood-based deviant peers is an important risk in middle childhood (Dishion, Andrews, & Crosby, 1995; Lipsey & Derzon, 1998; Kiesner et al., 2003). They also support the existing evidence that deviant peer dyads appear to reinforce and maintain AB activities in early adolescence (Dishion & Dodge, 2005). Although we did not test this directly, neighborhood peer relationships may offer a context in which values, norms, and behaviors of the neighborhood may be imparted to the developing child (Ingoldsby & Shaw, 2002; Leventhal & Brooks-Gunn, 2000). From the current study's design, it cannot be inferred whether having an antisocial peer was a consequence of early-starting AB, or whether peer behavior affected escalation of boys' AB (Keenan et al., 1995). However, reciprocal effects are likely. The study was also limited by the reliance on target boys' reports on their peers' behavior, which may reflect biases or over-inflation (Kandel, 1996), although using maternal reports to establish the antisocial trajectories reduces this informant bias.

Methodological Considerations

As discussed in recent reviews (Leventhal & Brooks-Gunn, 2000), neighborhood effects may be confounded with selection effects. We attempted to control statistically for family-level poverty, ethnicity, and parent–child variables in our models to reduce this bias. Our objective measure of neighborhood disadvantage demonstrated significant overlap with ethnicity. In this sample, significantly more African Americans lived in impoverished neighborhoods than did European American participants. Larger samples are needed to tease apart the complicated relations between neighborhood context, ethnicity, and AB patterns (Brooks-Gunn, Duncan, & Aber, 1997; Farrington et al., 1996). Although the design and sample size in this study were comparable to other studies of AB patterns (e.g., Lacourse et al., 2003; Spieker, Larson, Lewis, Keller, & Gilchrist, 1999), it is relatively small for the identification of unique neighborhood effects. Also, a large majority of the families in the present sample were living under the poverty level at age 2, and although families moved, it is likely that many remained in relatively impoverished environments. Our census-based measure of neighborhood disadvantage was a dichotomized variable to reflect the fact that it is in the most extremely impoverished neighborhoods where we expected effects within this primarily low-income sample (Chung, Hawkins, Gilchrist, Hill, & Nagin, 2002). Interestingly, the continuously measured maternal perceptions of neighborhood problems was moderately associated with the more objectively assessed census-based measure ($\rho = .42$; $p < .01$), indicating that mothers could reliably discriminate levels of neighborhood risk. Neighborhood risks were discriminating

indicators of low versus high AB patterns, signifying that even within poor families and neighborhoods, variability in neighborhood disadvantage may be associated with AB patterns. This has important social policy implications, as we attempt to identify the most at-risk families for intervention.

A few other limitations are pertinent to mention. The SGM approach assumes that there is no appreciable variability within trajectory groups (Nagin, 1999). Probability scores used to assign groups did vary within individuals, yet high mean probabilities within groups supported distinct groups. The small cell size for high AB groups resulted in reduced power for detecting group differences and amplifies the need for future investigations to recruit larger samples of children with clinically meaningful trajectories of AB. Neighborhood experience may differ in urban versus suburban/rural communities (Brody et al., 2001). Participants consisted of low-income boys in one Northeastern urban area; relations may be different in other contexts. Lastly, there are demonstrated differences in the development of AB (Silverthorn & Frick, 1999) and exposure to neighborhood factors (Osofsky, 1995) across gender that could not be evaluated here.

SUMMARY AND CONCLUSIONS

The present findings broaden prior research documenting relations between the development of AB and neighborhood-based factors. The results provide support for the extension of the age at which neighborhood disadvantage is considered a critical factor in models of AB, downward into early childhood. With the increasing body of knowledge regarding interactive relations and multilevel influences among child, family, peer, and community contexts (Beyers et al., 2003; Tolan et al., 2003), we get closer to delineating the mechanisms of youth antisocial development. Furthermore, the findings are consistent with the notion that more extreme neighborhood disadvantage and high parent–child conflict in early childhood may result in higher early externalizing problems at age 5, which in turn are associated with involvement with antisocial neighborhood peers and continued growth in AB across middle childhood. The finding that neighborhood best friend antisocial behavior at age 10 was the only variable to uniquely discriminate membership in the early starting and desisting AB pathways suggests the importance of clinical attention to early neighborhood-based relationships in youths' lives. As early AB is associated with continuing pathways toward violence and crime (Elliott, 1994; Nagin & Tremblay, 1999; Stanger et al., 1997), these findings highlight the need for prevention efforts involving family-based interventions targeted to the most disadvantaged neighborhoods.

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