

# The Contributions of Ineffective Discipline and Parental Hostile Attributions of Child Misbehavior to the Development of Conduct Problems at Home and School

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Data were collected in a longitudinal study of 134 boys and 132 girls and their families during kindergarten and first grade. Four hours of parent–child interaction were coded to ascertain parent discipline practices. A structured interview assessed maternal attributions about child behavior. Maternal ratings of child conduct problems at kindergarten entry reliably predicted the mother’s subsequent hostile attributions concerning child misbehavior and use of ineffective discipline tactics. Ineffective maternal discipline and the interaction of ineffective discipline and hostile attribution predicted growth in child conduct problems at home during kindergarten and first grade. Changes in teacher-reported and observed child conduct problems at school during kindergarten and first grade were predicted by growth in conduct problems at home and by the interaction of ineffective discipline and hostile attribution.

Traditionally, research on socialization in the parent–child relationship has been derived from theories emphasizing the importance of relatively specific, single social processes (Maccoby, 1992), such as reinforcement (Patterson, 1982), social cognition (Bugental, Johnson, New, & Sylvester, 1998), or emotion regulation (Cole, Michel, & Teti, 1994). More recently, theories about parent–child relationships have emphasized the dynamic interplay among these various processes (Cummings, Davies, & Campbell, 2000), but empirical tests of multiprocess models are rare (Dodge, 2002). The reciprocal contribution of parent and child behavior to family socialization context has a longer history (Bell, 1968). However, it continues to be difficult to capture in empirical research the means by which the parent and child co-construct the parenting relationship (Collins, Maccoby, Steinberg, Hetherington, & Bornstein, 2000). In this study, we tested a model of the early development of child conduct problems that incorporates the reciprocal effects of child behavior on parenting and of parenting on child behavior. We also assessed the independent and conjoint impact of parental attributions and discipline tactics on the multi-setting persistence and growth of child conduct problems during early elementary school.

## The Importance of Early Child Conduct Problems at the Transition to Elementary School

Children’s disruptive and aggressive behavior normatively declines during the preschool and early elementary school years

(Patterson, Shaw, Snyder, & Yoerger, in press). These declines are thought to be the result of child neuropsychological maturation (Nigg & Huang-Pollock, 2003) and of socialization in family, school, and peer environments (Snyder, Reid, & Patterson, 2003). However, some children do not evidence age-normative declines in conduct problems (Tremblay, 2000) and comprise a group who are at risk for early-onset, life-course-persistent antisocial behavior (Moffitt, 1993). The manner in which the parent–child relationship contributes to persisting conduct problems during early childhood is an important theoretical and practical issue.

## The Role of Parental Discipline and Attributions in the Development of Conduct Problems

Parental attributions about child misbehavior and the discipline tactics parents use to ameliorate such behavior are thought to powerfully influence the development and persistence of conduct problems during childhood (Dix, 1993; Patterson, 1997). A number of empirical efforts have been made to ascertain how the combination of ineffective parental discipline and hostile parental attributions contributes to the development of conduct problems. Most mediational models hypothesize that hostile parent attributions are associated with increased risk for child conduct problems insofar as such attributions induce increased parental anger and harsh disciplinary practices. There is considerable empirical support for a mediational model (e.g., MacKinnon-Lewis et al., 1994; see Bugental, Johnson, New, & Sylvester, 1998, for a review). In perhaps the methodologically strongest longitudinal test to date, Nix et al. (1999) reported that maternal hostile attributions prior to school entry reliably predicted children’s later conduct problems at school; however, a large portion of the variance in child conduct problems accounted for by attributions was mediated by harsh parental discipline. Nix et al. (1999) also found evidence for reciprocal child-to-parent effects; the contribution of parental discipline to child conduct problems and its role in mediating the

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effects of attributions held even after earlier child conduct problems at home were controlled.

However, the joint relationship of parental attributions and parental discipline to child conduct problems may be represented by a moderator rather than a mediator effect. Ineffective and irritable parental discipline may be maintained and exacerbated if it is accompanied by frequent hostile attributions about the child. Parent attributions can be construed as verbal-cognitive rules about the sources of child misbehavior that are used to guide discipline efforts (Hayes & Ju, 1995). Once established, these rules may “insulate” a parent’s discipline tactics from actual situational variation and developmental change in child behavior. Evidence suggests that parents who attribute the cause for conduct problems to traits in the child are unwilling to alter discipline practices (Miller & Prinz, 2003). Continued adherence to ineffective disciplinary practices, in turn, may then maintain and exacerbate child disruptive and aggressive behavior.

This moderator effect may occur in the following manner. Parents who believe their children chronically and intentionally misbehave are likely to respond in an irritable and ineffective manner. These parents are unlikely to carefully track child behavior because they already “know” the child’s propensity to misbehave is high. Hostile attributions and poor tracking obscure parents’ discernment of discipline strategies that actually ameliorate child disruptive and aggressive behavior or improvements in child behavior that result from maturation or other socialization experiences (Snyder, Reid, & Patterson, 2003). Given that the problem is “in the child” and thus relatively immune to change, efforts by parents to systematically adopt alternate discipline practices are unlikely.

In contrast, parents who evidence irritable and ineffective discipline tactics in the absence of hostile attributions about child misbehavior may be more sensitive to situational variation and developmental diminutions in child conduct problems. This sensitivity may provide the conditions requisite to change in discipline practices over time. There may also be parents who make hostile attributions about child misbehavior but who are at least modestly skilled in terms of discipline. Insofar as hostile attributions do not diminish the effectiveness of parental discipline (i.e., they remain unexpressed cognitive events), child conduct problems are likely to diminish over time. Finally, the lowest risk for problem child behavior would occur when effective parental discipline is combined with a nonhostile attribution style that is sensitive to changes in child behavior. Accurate tracking of changes in child conduct problems would facilitate the ongoing selection of effective discipline strategies appropriate to the child’s needs.

Mediator and moderator models have different implications for parenting interventions targeting child conduct problems. In mediator models, interventions that alter parent discipline practices should be sufficient, as they are the proximal determinant of conduct problems and fully account for the effects of hostile attributions on conduct problems. Moderator models, on the other hand, suggest that interventions should focus on altering both attributions and discipline skills. Improved discipline skills may be difficult to engender or to sustain in the relative absence of accompanying reductions in hostile attributions.

### Reciprocal Contributions of Child Characteristics and Parenting to Growth in Conduct Problems

A variety of child characteristics, including difficult temperament (Bates, Pettit, Dodge, & Ridge, 1998; Kochanska, 1998), impulsivity–inattention (Moffitt, Caspi, Rutter, & Silva, 2001), and temper tantrums (Stoolmiller, 2001), affect parenting and increase risk for the development of child conduct problems. Such “child effects” may be represented by mediator or moderator models (Holmbeck, 1997). Moderator models specify that the effect of one variable (e.g., parenting) depends on the level of a second variable (e.g., the child characteristic). Bates et al. (1998), for example, reported that children with a difficult temperament at age 5 are likely to display high levels of conduct problems in middle school, but only when exposed to inconsistent and laissez-faire parenting. In contrast, firm and restrictive control had deleterious effects on the middle-school adjustment of children who evidenced an easygoing temperament at age 5. Similarly, Stoolmiller (2001) reported that boys rated as hard to manage by their mothers evidenced later conduct problems, but only when they experienced ineffective and punitive parental discipline.

In mediator models, early child characteristics are hypothesized to evoke parenting relationships that, in turn, facilitate the appearance, growth, and persistence of later child conduct problems. Dodge (2002), for example, found that early child temperament reliably predicted conduct problems in middle school. However, harsh physical discipline fully mediated the temperament-to-conduct-problem relation. Using multiagent constructs, Patterson, DeGarmo, and Knutson (2000) found that the relation of child impulsivity and hyperactivity to conduct problems in middle school was highly reliable. However, this robust relationship was reduced to nonsignificance when coercive parent discipline was entered as a mediator. Using a mediator model, in this study we assessed the degree to which parent discipline and parent attributions predicted growth in child conduct problems during kindergarten and first grade while simultaneously accounting for the relation of child conduct problems to parental discipline and attributions at kindergarten entry.

### The Generalization of Conduct Problems From Home to School

The transition to elementary school is a particularly important juncture for the continuity of conduct problems. Most theories assume that child disruptive and aggressive behavior shaped in the home generalizes to school and peer environments (Ramsey, Patterson, & Walker, 1990). This straightforward home-to-school generalization model ascribes considerable power to parents. However, this generalization model is likely an oversimplification. The transition to elementary school entrains a number of other processes, including peer coercion–rejection, selective affiliation, and deviancy training. These processes may maintain and exacerbate disruptive and aggressive behavior already shaped in the home context (Snyder, Reid, & Patterson, 2003). Some data suggest that direct parental effects on child behavior at school are small, as peer social processes exert increasing cumulative influence on child behavior (Patterson, Dishion, & Yoerger, 2000; Patterson & Yoerger, 2002). However, other data suggest that parental attributions and discipline may have direct effects on school conduct problems during the early elementary grades (Nix et al., 1999).

The degree to which parenting influences child behavior at school in the context of the substantial influence attributed to peers is an unresolved issue (Harris, 1995, 2002). The powerful effects of peer coercion and rejection (Snyder, Prichard, Schrepferman, Patrick, & Stoolmiller, in press) and of deviant peer association (Snyder, Schrepferman, et al., in press) on conduct problems in school have already been demonstrated in the sample used in the present study. The issue of the relative influence of parents was addressed here by testing the degree to which parental discipline and attributions (and their interaction) had direct effects on child conduct problems at school in the presence of home-to-school generalization processes.

Summary and Hypotheses

In summary, in this study we tested a model that incorporates reciprocal child–parent effects and the independent and interactive effects of two parenting processes on the development of child conduct problems during early elementary school. More specifically, we hypothesized that (a) child conduct problems at kindergarten entry would be prospectively associated with parent hostile attributions about child misbehavior, ineffective parental discipline, and their interaction (represented in Figure 1 by paths from intercept home conduct problems to % hostile attributions, ineffective discipline, and Hostile Attributions × Ineffective Discipline), each measured during the kindergarten year; (b) parent hostile attributions, ineffective parental discipline, and the Hostile Attributions × Ineffective Discipline interaction would predict growth in child conduct problems at home over the subsequent 18 months (represented in Figure 1 by paths from % hostile attributions, ineffective discipline, and Hostile Attributions × Ineffective Discipline to slope home conduct problems); (c) growth in child conduct problems at home during kindergarten and first grade would predict growth in child conduct problems at school

during the same time period (represented in Figure 2 by paths from intercept and slope of home conduct problems to slope of school conduct problems); and (d) parent hostile attributions, parent ineffective discipline, and the interaction of attributions and discipline would not predict growth in child conduct problems at school (represented in Figure 2 by paths from % hostile attributions, ineffective discipline, and their interaction to slope in school conduct problems) over and above the contribution of growth in child conduct problems at home.

Method

Participants

The participants were 134 boys and 132 girls whose mean age was 5.5 years (range = 5.2 to 6.1 years) at the initial data collection point (entry to kindergarten). A community sample was obtained by using a recruiting strategy targeting all kindergarten children ( $n = 352$ , participation rate = 76%) who enrolled in one elementary school in each of 3 consecutive years. The school serves a low socioeconomic neighborhood in a city with a population of over 350,000. Seventy-one percent of the children were European American, 19% were African American, 5% were Hispanic/Latino, 3% were Native American, and 2% were Asian American. Forty-three percent of the children lived with two biological parents, 28% lived with a single parent (predominantly the mother), 21% resided in blended households, and 7% resided in households with other family configurations. The median family income per family member (total family income divided by the number of family members) was \$8,300; 28% of the children lived in families with incomes below the poverty line, and an additional 23% lived in families with incomes between the poverty line and 150% of the poverty line. Forty-six percent of the parents had completed high school, 20% had less than a high school education, and 34% had education beyond high school. Seventy-five percent of the two-parent families comprised dual wage earners, and 9% of the families had no employed adult.

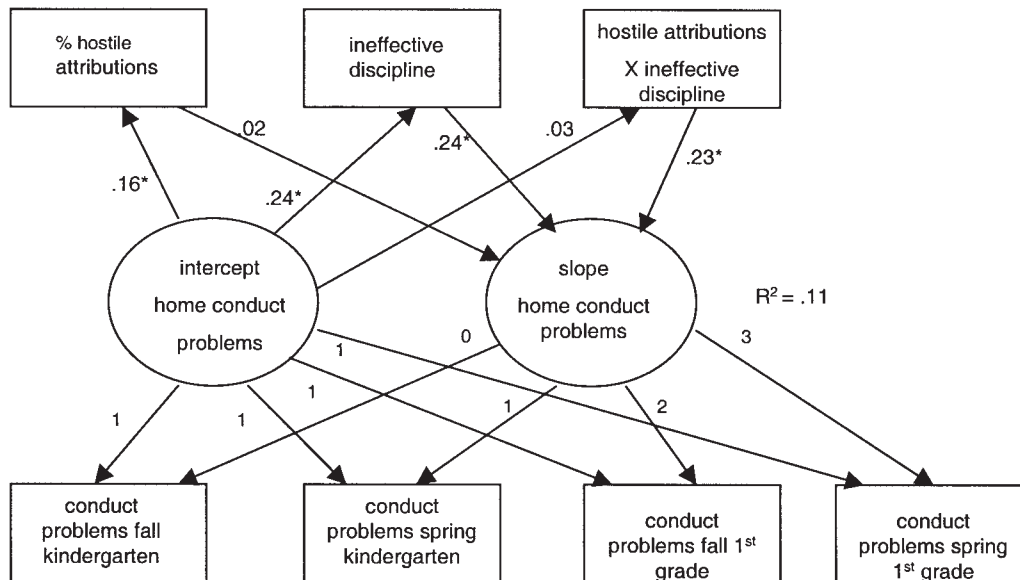


Figure 1. The reciprocal relationships of child conduct problems at home with parental hostile attributions, ineffective discipline, and the interaction of hostile attributions and ineffective discipline. Note that error terms are omitted for clarity.  $\chi^2(15, N = 275) = 31.28, p = .01$ ; comparative fit index = .993; root-mean-square error of approximation = .055. \* $p < .05$ .

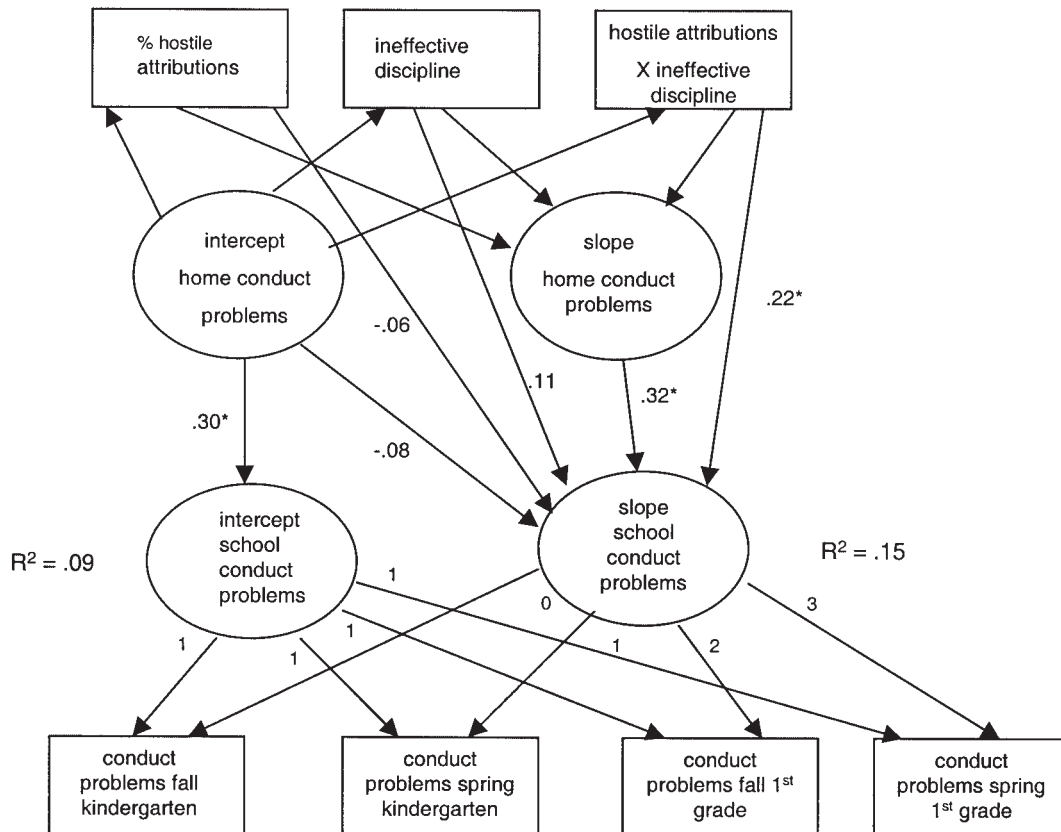


Figure 2. The relationships of child conduct problems at home, parent hostile attributions, parent ineffective discipline, and the interaction of hostile attributions and ineffective discipline to child conduct problems at school. Note that error terms and indicators of the growth model for home conduct problems are omitted for clarity.  $\chi^2(40, N = 275) = 67.09, p = .005$ ; comparative fit index = .995; root-mean-square error of approximation = .047. \* $p < .05$ .

Data collection was continued after participants made school or residential moves during kindergarten and first grade. At least partial data were available on 97.3%, 96.9%, and 96.6% of the 266 children in the spring of the kindergarten year and the fall and the spring of the first-grade year, respectively. The most complete data were available for playground observations at each developmental point (at least 92%). The least complete data were available for parent ratings of child conduct problems (85% in the fall and the spring of the first-grade year). Missing data were estimated with AMOS 4.0 (Arbuckle & Wothke, 1999). AMOS uses the full information maximum likelihood (FIML) estimation method. The FIML method does not delete cases missing from one or more waves of data collection, nor does it delete cases missing one or more variables within a wave of data collection. This procedure avoids potential problems such as biased parameter estimates, which are likely to occur if pairwise or listwise deletion procedures are used to compensate for missing data (Arbuckle & Wothke, 1999; Wothke, 2000).

### Measures

#### Child Conduct Problems at Home

Parental ratings of child conduct problems were obtained in the fall and spring of the kindergarten year and the fall and spring of the first-grade year using an adaptation of the Child Behavior Checklist (CBCL; Achenbach, 1991). Parents were asked to rate their child's behavior over the previous 6-month interval. Conduct problems were defined by the Aggres-

sion scale, which comprises 23 items (e.g., "argues," "is cruel/bullies," "disobeys," "fights," "teases," and "has tantrums"). Parents indicated the occurrence of the behavior described by each item on a 0 (*not true*) to 2 (*very true or often true*) Likert-type scale. The internal reliability for the Aggression scale was greater than .90 at each assessment point. The scale scores at the four developmental points were used as indicators for a growth model indicating change over time in child conduct problems at home.

#### Child Conduct Problems at School

**Teacher ratings.** Teachers' ratings of child conduct problems were obtained in the fall and spring of the kindergarten and first-grade years using an adaptation of the Teacher Report Form (TRF; Achenbach, 1991). Teachers were asked to rate a child's behavior over the previous 2-month period. Different teachers typically completed these scales in kindergarten and first grade. Conduct problems were defined by the Aggression scale, which comprised 26 items (e.g., "argues," "is cruel/bullies," "disobeys," "teases," "has tantrums"). Teachers indicated the occurrence of the behavior described by each item on a 0 (*not true*) to 2 (*very true or often true*) Likert-type scale. The internal reliability of the Aggression scale was greater than .93 at each assessment point.

**Playground observation of child conduct problems.** The conduct problems of participating children were observed on the school playground on multiple occasions at each of four developmental points: in the fall (September–October) and spring (April–May) of both the kindergarten (six

occasions each; mean child ages = 5.5 and 6.2 years, respectively) and first-grade years (four occasions each; mean child ages = 6.5 and 7.2 years, respectively). On each occasion, the behavior of the target child was coded for 5 min using an adaptation of the playground behavior coding system developed by Weiss, Dodge, Bates, and Pettit (1992). This interval coding system classifies child behavior into one of seven mutually exclusive and collectively exhaustive categories every 10 s. The seven categories (the first three are listed in order of hierarchical coding priority) are as follows: negative interaction, rough play, positive interaction, solitary play, parallel play, solitary unfocused activity, and other. One category, negative interaction (including verbal and physical aggression), was used in the present research. Coders also made global ratings of children's conduct problems at the end of each 5-min observation occasion, using two 5-point Likert-type items: "angry and hostile" and "aggressive." Both rates per minute and observer ratings of child conduct problems (same-occasion mean  $r > .40$ ,  $p < .05$ ) were used because each is likely to evidence different sources of measurement error.

Coders were intensively trained prior to the collection of data until reaching a minimum agreement of .70 (kappa) with a master coder. Additional training was initiated prior to each of the developmental points at which playground observations were made. Recalibration sessions were held biweekly to minimize observer drift. Children were assigned to coders and observation dates in a quasi-random fashion on the basis of coder and child availability. Two observers coded children's behavior on 10% of all occasions to assess observer agreement. Assignment of occasions for reliability assessment was quasi-random according to both coders and children. Assignment of observation occasions for reliability assessment was proportional to the number of observation occasions at each of the developmental points. Reliability was assessed on a total of 520 observation occasions and for a total of 43.3 hr. Interval-by-interval coder agreement (kappa) for negative interaction ranged from .69 to .82 across the four developmental points. Coder agreement on the two Likert-type items, as assessed by intraclass correlations, exceeded .68 at each of the four developmental points. There were no statistically reliable variations in coder agreement by child gender, coder, or developmental point.

The procedure was as follows: Coders identified a target child during free-play periods on the school playground, which occurred primarily at the noon recess. Observers located themselves at a distance (typically within 6 ft [1.8 m]) and perspective (frontal view) from which they could see and hear the social exchanges between children. When a child was not visible or relatively proximal to the observer and the relevant social behavior was unavailable, coding was interrupted until proximal contact could be reestablished. Children's reactivity was minimized in three ways: (a) by holding practice coding sessions at the initiation of data collection at each developmental point to (re-)acclimate children to the presence of the observers; (b) by having the observers be nonresponsive to child overtures and queries; and (c), when children evidenced sustained (more than 1 min) behavioral reactivity (whispering, running away, etc.), by terminating observation and reestablishing it on a new occasion. Observations were conducted on a playground adjacent to the school. Interaction was relatively free of adult constraints and primarily determined by the natural interests and affiliations of the children and the contingencies that they provided one another.

Negative interaction was calculated as a rate-per-minute (rpm) score for each child on each occasion. The cross-occasion internal reliability for rpm negative interaction exceeded an alpha of .60 at each of the developmental points. A summary score was derived by averaging rpm negative interaction across observation occasions at each developmental point. The mean intraclass correlation for the coder ratings on two Likert-type items (1 = *not at all* to 5 = *very much*) on the same observation occasion was greater than .67 at each developmental point. Cross-occasion internal reliability for the summed coder ratings exceeded an alpha of .57 at each developmental point. A summary score was derived by averaging coder ratings of child hostility and aggression across occasions at each developmental point.

*Aggregated indicators of child conduct problems at school.* Aggregate scores for school conduct problems at each developmental point were derived by combining teachers' reports of child conduct problems on the TRF, observed rpm negative interaction on the playground, and observers' ratings of child aggressiveness/hostility on the playground. Convergence among the three measures was first examined by testing a construct at each of the four developmental points. The three measures all loaded reliably on the construct, with standardized path coefficients of  $b > .50$  ( $p < .01$ ) at each point. Next, each measure in the spring of the kindergarten year and in the fall and spring of the first-grade year was standardized relative to the mean and standard deviation for that measure in the fall of the kindergarten year. This approach captures change in absolute levels of conduct problems over time, and each of the three measures (TRF, observed rpm, and observer ratings) contributes equally to the composite score at each developmental point, with the reference point being the fall of the kindergarten year. These mean scores were used as indicators in a latent growth model for child conduct problems at school.

### *Ineffective and Irritable Parental Discipline*

*Parent-child lab task coding.* The interaction of each child with a parent (97% of interactions were with mothers) was videotaped through a one-way mirror for 2 hr on each of two occasions during the child's kindergarten year. The room in which the interaction occurred contained a table and two chairs and a variety of interactive toys, games, and other materials. The sessions were structured around a series of tasks: playing a novel interactive game; planning a fun activity; talking about the child's day at school; problem solving related to parent- and child-identified issues; practicing arithmetic, word recognition, and spelling; snack time; free play; picking up; and reading. These tasks were verbally cued by the assessor when entering the playroom at planned intervals.

Parent-child interaction was coded using the Family Peer Process code (FPP; Stubbs, Crosby, Forgatch, & Capaldi, 1998). The FPP codes the occurrence of parent and child behavior into one of 24 mutually exclusive and collectively exhaustive categories along a real time line, including both the onset and the offset of the behavior. Each behavior code is qualified by an additional code indicating general affect (happy, caring, neutral, distressed, aversive, or sad). One indicator of ineffective/irritable discipline was the rpm of behavior codes in which the parent directed aversive behavior (e.g., aversive verbal and physical) and/or negative affect (distressed or angry) toward their child. These codes reflect a range of aversive parental behaviors, from harsh (e.g., swatting, coercive threats, derogation, anger) to minor irritation (e.g., commands, disapproval, teasing), directed toward the child. To minimize skewness, the rpm scores were log transformed and averaged across sessions to obtain a single composite score. Coder agreement on rpm of parent aversive codes, as assessed by intraclass correlations, was .87 (Stoolmiller & Snyder, 2004).

The FPP coders and a second, independent set of coders (who coded parent-child interactions for emotion displays using the Specific Affect Coding System) made ratings of parents' use of ineffective discipline tactics after every 15 min of observation, using 7 Likert-type scale items: "relies on negative affect," "uses ridicule and sarcasm," "scolds and lectures," "grabs and hits," "threatens punishment," "is erratic and inconsistent," and "is strict and oppressive." Parent-child dyads were randomly assigned to coders. Coder agreement on the 7-item scales (1 = *not at all* and 5 = *always*) as assessed by intraclass correlation was .78. Internal reliabilities for Sessions 1 and 2 were .83 and .86, respectively, and cross-session reliability was .38.

The rpm of parent aversive behavior from each of the two sessions and the two sets of coder discipline ratings from each of the two sessions were used as indicators for a construct labeled *ineffective/irritable discipline*. The path to rpm of parent aversive behavior in the first session was set to 1 for scaling. Each of the remaining indicators loaded reliably ( $p < .05$ ) on the construct, and the construct fit the data well ( $\chi^2/df = .54$ , comparative fit index [CFI]  $> .999$ , root-mean-square error of approximation [RMSEA]

< .001). A construct score for ineffective/irritable discipline was used in all subsequent analyses.

### Parent Hostile Attributions

Parent hostile attributions were assessed in the fall of the child's kindergarten year using a structured interview for Parent Social Information Processing (P-SIP). In the P-SIP, parents are asked to "think aloud" about a variety of common, challenging behaviors as if they were displayed by their own child (Snyder, Patterson, et al., 2003). The P-SIP consists of eight brief verbal vignettes (e.g., themes such as not sharing, noncompliance, a verbal argument with a friend) designed to vary on the severity and intentionality of child misbehavior.

After the verbal presentation of each vignette, parents were asked a series of five open-ended questions, and their responses were transcribed verbatim. These verbatim responses were coded according to preestablished criteria by trained coders. The questions or verbal prompts and their associated cognitive categories, in the order of their presentation after the verbal presentation of the vignette, were as follows: (a) "Tell me what happened in this situation." This immediate recall assesses the degree to which parents attended to relevant critical information concerning the child's behavior and its context, and is labeled *cue detection*. (b) The parent was then asked, "Why did the behavior occur?" in order to ascertain parents' attribution for the child misbehavior depicted in the vignette. The parents' attribution was scored as "hostile" if the child's response was described as careless, selfish, purposeful, defiant, inconsiderate, or hostile, and as "benign" if described as accidental, nonintentional, normative, or typical child behavior. (c) Parents were then asked, "What would you do [in response to the child behavior]?" in order to measure response generation. Two additional responses were sought using follow-up probes ("Tell me another thing you might do . . ."). These responses were used to assay response generation. (d) Finally, parents were asked which response they would most likely use and how their child would react to this response in order to determine parental self-perceived efficacy. The percentage of total vignettes to which a parent attributed hostile intentions to child behavior (responses to the question "Why did the behavior occur?") was used in the current analyses.

Coder agreement (kappa), cross-vignette internal reliability, and test-retest reliability for hostile attribution were .66, .56, and .65, respectively. The percentage of parent hostile attributions was calculated. The mean percentage of hostile attributions was 38%, and the standard deviation was 26%. Hostile attributions were normally distributed.

## Results

### Analytic Plan

Descriptive statistics for each of the variables are presented first. Analyses are then carried out in a series of steps. First, linear growth models describing changes in conduct problems at home and school were fit to the data. Second, after calculating an interaction term for ineffective/irritable parental discipline and parent hostile attributions (defined as the product of ineffective parenting and hostile attributions after each variable had been centered; Holmbeck, 1997), correlations between the variables were calculated, and a measurement model was fit to the data. Third, a causal model was fit to the data to test the hypothesis concerning the reciprocal relation of child conduct problems at home with ineffective/irritable parent discipline, parent hostile attributions, and their interaction; this model was labeled the *home-only model*. Fourth, a causal model was fit to the data to test the hypothesis that processes captured in the home-only model would predict change in child conduct problems at school; this model was labeled the *home-to-school generalization model*.

### Descriptive Statistics

Means, standard deviations, and ranges for all of the variables are shown (prior to any transformations) in Table 1. The sample demonstrated a wide range on all measures. Children in the sample displayed substantial rates of conduct problems. The mean item score for parent-reported conduct problems at fall kindergarten was 0.66 ( $SD = 0.23$ ), more than one half a standard deviation above the norms for the CBCL Aggression scale provided by Achenbach (1991). Thirteen percent of the children had  $T$  scores greater than 70 (98th percentile). The mean item score for teacher-reported conduct problems at fall kindergarten was 0.33 ( $SD = 0.33$ ), more than one fourth of a standard deviation above the norms for the TRF Aggression scale provided by Achenbach (1991). Eight percent of the children had  $T$  scores for aggression greater than 70 (98th percentile). On average, children displayed high rates of negative interaction on the playground—about twice every 3 min. These rates are comparable to those reported for a high-risk sample of first-grade children in the Linking the Interests of Families and Teachers prevention project (Stoolmiller, Eddy, & Reid, 2000). Mean observer ratings of child hostility and aggressiveness were nearly 1.75, with 2 on the rating scale indicating "a small amount" every 5 min.

On average, parents were observed to direct aversive behavior/affect toward their children about once every 2 min. This mean falls between that observed in clinically referred (once every 1.5 min) and normative (once every 3 min) samples of mothers with comparably aged children (Snyder, 2002). Mean coder ratings of

Table 1  
Means, Standard Deviations, and Range for Measured Variates

Construct and variates	<i>M</i>	<i>SD</i>	Range
Home conduct problems			
Parent CBCL <sup>a</sup>			
Fall kindergarten	0.66	0.23	0.00–1.27
Spring kindergarten	0.65	0.25	0.00–1.23
Fall first grade	0.59	0.28	0.00–1.25
Spring first grade	0.61	0.31	0.00–1.23
School conduct problems			
Teacher TRF <sup>a</sup>			
Fall kindergarten	0.33	0.33	0.00–1.33
Spring kindergarten	0.39	0.34	0.00–1.30
Fall first grade	0.39	0.35	0.00–1.36
Spring first grade	0.43	0.38	0.00–1.37
Rpm negative interaction			
Fall kindergarten	0.65	0.50	0.00–2.75
Spring kindergarten	0.69	0.52	0.00–3.00
Fall first grade	0.66	0.63	0.00–4.50
Spring first grade	0.64	0.64	0.00–4.75
Observer ratings of aggression and hostility <sup>a</sup>			
Fall kindergarten	1.71	0.50	1.00–3.75
Spring kindergarten	1.73	0.44	1.00–3.25
Fall first grade	1.74	0.56	1.00–4.25
Spring first grade	1.78	0.60	1.00–3.75
Parent ineffective discipline			
Rpm observed aversive	0.44	0.43	0.00–3.50
Coder ratings <sup>a</sup>	1.42	0.31	1.00–2.25
Parent hostile attribution			
% hostile attributions	37	26	0–100

Note. CBCL = Child Behavior Checklist; TRF = Teacher Report Form; Rpm = rate per minute.

<sup>a</sup> Expressed in terms of mean item score.

ineffective/irritable discipline were 1.42 (where a 2 on the scale indicates "once in a while" during the 15-min interval under scrutiny). The mean percentage of parent negative attributions was 38%. Normative comparison data are not available for these latter two measures.

### *Growth Models for Conduct Problems at Home and at School*

Change over time in children's conduct problems at home (parent report) and at school (aggregation of teacher report, rpm negative interaction on the playground, and coder ratings of hostile and aggressive behavior on the playground) from the fall of the kindergarten year through the spring of the first-grade year were fit to the data using linear growth models, with the intercept set at the fall of the kindergarten year. The results of these analyses are shown in Table 2. The linear growth model for conduct problems at home fit the data adequately:  $\chi^2(6, N = 275) = 12.62, p = .051$ , CFI = .996, RMSEA = .067. A good fit of the model to the data typically entails a  $p$  value  $> .05$ , a CFI  $> .950$ , and an RMSEA  $< .05$ . The mean level (intercept  $M = .655$ , critical ratio [CR] = 46.27) and between-child variability (intercept variance = .042, CR = 9.76) of child conduct problems at home in the fall of the kindergarten year were significantly different from 0. Parent-reported conduct problems showed a reliable average decline during kindergarten and first grade (linear slope  $M = -.014$ , CR = -3.44). Reliable individual differences in change in parent-reported conduct problems over time (slope variance = .002, CR = 3.72) were also observed. Plots of individual growth trajectories (not shown) indicated that some children evidenced increases but that more children evidenced decreases in parent-reported conduct problems. The direction and amount of change in conduct problems during kindergarten and first grade were not related to initial levels of conduct problems in early kindergarten (intercept to slope correlation = .06, *ns*).

The change over time, or growth model, for composite conduct problems at school (teacher ratings, observed rpm of negative interaction, and observer ratings of hostility and aggression) fit the data quite well:  $\chi^2(6, N = 275) = 4.14, p = .528$ , CFI = .999, RMSEA = .001. The mean level (intercept  $M = 2.365$ , CR = 52.13) and between-child variability (intercept variance = .337, CR = 8.17) of child conduct problems at school in the fall of the kindergarten year were significantly different from 0. On average, children's conduct problems at school evidenced nonsignificant declines (linear slope  $M = -.038$ ; CR = -1.41) during kindergarten and first grade. Reliable individual differences in change in

conduct problems at school (slope variance = .054, CR = 6.50) were observed. Plots of individual levels and change over time (not shown) indicated that approximately equivalent numbers of children showed increases and decreases in school conduct problems over time. The direction and amount of change in conduct problems during kindergarten and first grade were not related to initial levels of those problems in early kindergarten (intercept to slope correlation =  $-.05$ , *ns*).

The mean declines in conduct problems at home and school are commensurate with the diminution in conduct problems reported in other longitudinal samples during the 5- to 7-year age range (Patterson et al., in press). The reliable individual differences in conduct problems in the fall of the kindergarten year (intercept variance) and in the change in conduct problems over time (slope variance) are sufficient to warrant examination of the role of parent hostile attributions, ineffective/irritable discipline, and their interaction in the development of conduct problems, as specified in the hypotheses.

### *Bivariate Correlations and Measurement Model*

The correlations among the variables used to test the hypothesized models are shown in Table 3. Ineffective/irritable parent discipline was not reliably correlated with hostile attributions or with the Discipline  $\times$  Attribution interaction term. Parents' hostile attributions were modestly correlated with the interaction term. Ineffective/irritable discipline was reliably correlated with all of the cross-time measures of conduct problems at home and school. Parents' hostile attributions were correlated with child conduct problems at home in the fall and spring of the kindergarten year and in the fall of the first-grade year. The Discipline  $\times$  Attribution term evidenced nonsignificant correlations with child conduct problems at home and school during kindergarten, but significant correlations with conduct problems at home and school during the first grade, with a general increase in the size of the correlations from the fall of the kindergarten year to the spring of the first-grade year. Nearly all of the correlations among parent- and teacher-reported conduct problems in the fall and spring of the kindergarten and first-grade years were significant, with higher same-setting than between-settings relationships and higher time-adjacent than time-distal relationships.

A measurement model was fit to the home-only model (shown in Figure 1 as a structural model), to estimate covariances among the intercept for conduct problems at home, the slope for conduct problems at home, hostile parent attribution, ineffective/irritable discipline, and the Discipline  $\times$  Attribution interaction. This

Table 2  
*Linear Growth Models for Conduct Problems at Home and at School*

Conduct problems	Intercept (fall kindergarten)		Slope (fall kindergarten to spring first grade)	
	<i>M</i>	Variance	<i>M</i>	Variance
Home conduct problems <sup>a</sup>	.655 (46.27)	.042 (9.76)	-.014 (-3.44)	.002 (3.72)
School conduct problems <sup>b</sup>	2.365 (52.13)	.337 (8.17)	-.038 (-1.41)	.054 (6.50)

*Note.* Critical ratios for the estimated means and variances are shown in parentheses.

<sup>a</sup>  $\chi^2(6, N = 275) = 12.62, p = .051$ ; comparative fit index (CFI) = .996; root-mean-square error of approximation (RMSEA) = .067. <sup>b</sup>  $\chi^2(6, N = 275) = 4.14, p = .528$ ; CFI = .999; RMSEA = .001.

Table 3  
Correlations Among the Variates

Variates	1	2	3	4	5	6	7	8	9	10	11
1. Ineffective discipline	—										
2. Hostile attribution	.10	—									
3. Ineffective Discipline $\times$ Hostile Attribution	.09	.14*	—								
4. Home conduct problems, fall kindergarten	.27**	.16*	.02	—							
5. Home conduct problems, spring kindergarten	.21**	.13*	.09	.72**	—						
6. Home conduct problems, fall first grade	.29**	.08	.14*	.67**	.76**	—					
7. Home conduct problems, spring first grade	.26**	.12	.19*	.61**	.65**	.75**	—				
8. School conduct problems, fall kindergarten	.17*	-.01	-.01	.42**	.38**	.40**	.34**	—			
9. School conduct problems, spring kindergarten	.16*	.04	.09	.27**	.21**	.29**	.33**	.55**	—		
10. School conduct problems, fall first grade	.24**	.05	.15*	.17**	.07	.13*	.24**	.53**	.58**	—	
11. School conduct problems, spring first grade	.18*	.02	.23*	.17**	.13	.23**	.30**	.46**	.65**	.77**	—

\*  $p < .05$ . \*\*  $p < .01$ .

model fit the data adequately:  $\chi^2(9, N = 275) = 21.95, p = .025$ , CFI = .986, RMSEA = .058. A measurement model was also fit to the home-to-school model (shown in Figure 2 as a structural model), to estimate covariances among intercepts for conduct problems at home and school, slopes for conduct problems at home and school, hostile parent attribution, ineffective/irritable discipline, and the Discipline  $\times$  Attribution term. This model fit the data adequately:  $\chi^2(33, N = 275) = 62.17, p = .002$ , CFI = .994, RMSEA = .054. These measurement models confirmed the adequacy of the measurement of the constructs under consideration and were also used to assess the adequacy of the theoretical models (Anderson & Gerbing, 1988) described in the next two sections.

#### The Home-Only Model

The first model ascertained the reciprocal relationship of child conduct problems at home to ineffective/irritable discipline, hostile parent attributions about child behavior, and the interaction of attributions and ineffective/irritable discipline (see Figure 1). More specifically, the model contains paths (representing child effects on parenting) from parent-reported child conduct problems at home during the fall of the kindergarten year (intercept) to parent hostile attributions, ineffective/irritable discipline, and the Discipline  $\times$  Attribution interaction. The model also represents parent effects on child behavior, in which parent hostile attribution, ineffective/irritable discipline, and the Discipline  $\times$  Attribution interaction predict change in child conduct problems at home during the kindergarten and first-grade years (slope). The model fit the data adequately,  $\chi^2(15, N = 275) = 31.28, p = .01$ , CFI = .993, RMSEA = .055, and did not differ significantly from the measurement model,  $\chi^2$  difference (6) = 9.33,  $p > .10$ . This nonsignificant difference indicates that the home-only causal model represents the data as well as but in a more parsimonious fashion than its complementary measurement model.

As shown in Figure 1, parent-reported child conduct problems early in the fall of the kindergarten year (intercept) predicted increased levels of parent hostile attributions ( $b = .16, CR = 2.52$ ) but accounted for a modest 3% of the variance. Parent-reported child conduct problems early in the fall of the kindergarten year (intercept) predicted more ineffective/irritable discipline ( $b = .24, CR = 3.68$ ) but accounted for a modest 6% of the variance. There was no reliable relation of parent-reported conduct problems in the fall of the kindergarten year (intercept) to the Discipline  $\times$  Attribution

interaction term ( $b = .03$ ). These relations suggest that child behavior at home does have an impact on parental attributions and discipline. The reciprocal parent-to-child effect was also supported. Ineffective/irritable parental discipline reliably predicted ( $b = .24, CR = 2.23$ ) increases in parent-reported child conduct problems during kindergarten and first grade (slope). Ineffective/Irritable Discipline  $\times$  Hostile Attribution (the moderator term) also predicted ( $b = .23, CR = 2.18$ ) growth in child conduct problems at home during kindergarten and first grade (slope). Hostile attribution was not significantly related to the slope in child conduct problems ( $b = .02$ ). Ineffective/irritable discipline and the interaction of discipline and hostile attribution accounted for 11% of the variance of between-child change (growth) in conduct problems in the home setting.

We examined the Discipline  $\times$  Attribution interaction using Holmbeck's (2002) guidelines for post hoc ascertainment of significant moderator effects—specifically, we examined the statistical significance of the slope for discipline at high, intermediate, and low levels of hostile attributions (divided into terciles). Supplemental analysis of slopes indicated that under conditions of frequent (> 55% of all vignettes) hostile attributions, ineffective/irritable discipline was associated with increased growth in parent-reported child conduct problems at home ( $b = .33, p = .016$ ), but under conditions of modest frequency (25% to 50%) of hostile attributions ( $b = .18, ns$ ) and low frequency (< 25%) of hostile attributions ( $b = -.12, ns$ ), ineffective/irritable discipline was not significantly related to growth in child conduct problems at home.

#### Home-to-School Generalization Model

A second, home-to-school generalization model, shown in Figure 2, was used to examine the relationship of the constructs in the home-only model (just described and shown in Figure 1) to changes in child conduct problems at school during kindergarten and first grade (a linear growth model with the intercept set at the fall of the kindergarten year). More specifically, the model added paths (to those shown in Figure 1) from home conduct problems at kindergarten in the fall (intercept) to school conduct problems at kindergarten in the fall (intercept) and to change in conduct problems at school during kindergarten and first grade (slope); a path was also added from the change (slope) in conduct problems at home to the change (slope) in conduct problems at school. The model also added paths from hostile parent attribution, ineffective/

irritable discipline, and the Discipline  $\times$  Attribution interaction term to the change in conduct problems during kindergarten and first grade (slope). The model represents the contributions of parent attributions and discipline and home conduct problems during kindergarten and first grade to change in conduct problems at school during kindergarten and first grade. The model fit the data adequately,  $\chi^2(40, N = 275) = 67.09, p = .005, CFI = .995, RMSEA = .047$ , and did not differ significantly from the measurement model,  $\chi^2$  difference (7) = 4.81,  $p > .10$ . The home-to-school theoretical model represents the data as well as but in a more parsimonious fashion than its complementary measurement model.

As shown in Figure 2, parent hostile attribution ( $b = -.06$ ) and ineffective/irritable discipline ( $b = .11$ ) were not significant predictors of the change over time (slope) in child conduct problems at school. The Ineffective/Irritable Discipline  $\times$  Hostile Attribution term was a significant predictor ( $b = .22; CR = 2.59$ ) of growth in child conduct problems at school. Fall kindergarten conduct problems at home (intercept) predicted concurrent child conduct problems at school ( $b = .30; CR = 2.32$ ) but did not predict growth in school conduct problems during kindergarten and first grade ( $b = -.08$ ). Growth in child conduct problems at home reliably predicted growth in child conduct problems at school ( $b = .32; CR = 2.59$ ). The model accounted for 9% of the variance in school conduct problems in the fall of the kindergarten year and 15% of the variance in growth in conduct problems in the school setting.

An additional model (not shown) was tested in which the paths between conduct problems at home and conduct problems at school were deleted; this model represented a test of the direct effects of parental attributions and discipline on growth in conduct problems at school. Ineffective/irritable discipline ( $b = .21, CR = 2.38$ ), but not hostile attributions ( $b = -.04, ns$ ), was significantly related to growth in child conduct problems at school. In conjunction with the findings presented in Figure 2, it appears that the effect of ineffective/irritable parent discipline on school conduct problems is mediated by child conduct problems at home. The model in Figure 2 also fit the data better than did the parent "direct effects" model:  $\chi^2$  difference (3) = 13.21,  $p < .01$ .

The effect of the Discipline  $\times$  Attribution interaction term on growth in school conduct problems was examined using Holmbeck's (2002) recent guidelines for post hoc ascertainment of significant moderator effects—specifically, the statistical significance of the slope for discipline at high, intermediate, and low levels of hostile attributions (divided into terciles) was examined. Supplemental analysis of slopes indicated that under conditions of frequent ( $> 55\%$  of all vignettes) hostile attribution, ineffective/irritable discipline was associated with increases in child conduct problems at school ( $b = .26, p = .025$ ). Under conditions of modest frequency (25% to 50%) of hostile attributions ( $b = .16, ns$ ), ineffective/irritable parent discipline had no significant effect on changes in child conduct problems at school. Under conditions of low frequency ( $< 25\%$ ) of hostile attribution, ineffective/irritable discipline was associated with declines ( $b = -.16, CR = -1.97$ ) in child conduct problems at school.

## Discussion

The data generally support the hypothesized multiprocess, reciprocal model of the relation between parenting and growth in

child conduct problems during early childhood. Child conduct problems at kindergarten entry reliably predicted parent hostile attribution and ineffective/irritable discipline. Ineffective/irritable parent discipline and the interaction of hostile attributions and ineffective/irritable discipline reliably predicted changes in parent-reported child conduct problems during kindergarten and first grade. Changes in child conduct problems at home during kindergarten and first grade reliably predicted changes in child conduct problems at school during the same time period. Parent hostile attributions and irritable/ineffective discipline did not add to the prediction of changes in school conduct problems over and above home conduct problems. However, the conjoint occurrence of frequent hostile parent attributions and high levels of ineffective/irritable discipline reliably predicted growth in conduct problems at school in the context of the direct home-to-school linkage of child conduct problems.

The findings are discussed in four sections. The first section focuses on the home-only model, and the second, on the home-to-school model. The third section considers the findings in a more general sense, including implications for developmental theory and intervention. The fourth section describes the strengths and limitations of the study.

### *The Home-Only Model*

The data suggest that frequent child conduct problems at home early at the transition to elementary school increase the likelihood that parents attribute intentionality to children's misbehaviors. Such intentionality places the locus of the problems "in the child" and minimizes parents' use of environmental circumstances or normative development as explanations for child misbehavior. This finding is consistent with previous research indicating that parents of conduct problem children are more likely to make hostile attributions than are parents of children with few conduct problems (e.g., Dix & Lochman, 1990; Johnson & Freeman, 1997). Frequent child conduct problems at home at the transition to elementary school were also prospectively associated with ill-devised parent discipline tactics, as reflected by parental irritability (frequent criticism, anger, and scolding) and ineffectiveness (inconsistency and noncontingency). These findings are congruent with previous correlational (Dumas, LaFreniere, & Serketich, 1995) and experimental (Barkley, 1988) research indicating that frequent child defiance, disruptiveness, and aggression evoke parental irritability and erode the use of effective disciplinary tactics.

The reciprocal impact of parenting on growth in child conduct problems at home during kindergarten and first grade was also apparent. Parent hostile attributions did not predict changes in child conduct problems during kindergarten and first grade. The lack of a relation between attributions and longer-term change in conduct problems is at odds with previous research (e.g., Nix et al., 1999) but may reflect prediction in the context of growth rather than autoregressive models of change. Ineffective and irritable parental discipline, on the other hand, reliably predicted changes in child conduct problems at home over the subsequent 18 months. This finding is consistent with a large body of previous research (Snyder, Reid, & Patterson, 2003). However, the effect of ineffective and irritable discipline on growth in child conduct problems appears to be exacerbated when parents also attribute hostile intent to child misbehavior or otherwise infer that the locus of the problem is "in the child." Insofar as relatively unskilled parents

avoid making such attributions and inferences, the impact of ineffective and irritable discipline strategies appears to have more benign long-term effects on child conduct problems. This Attribution  $\times$  Discipline moderator effect is consistent with a model of a rule-governed, attribution-induced rigidity in parent discipline (Miller & Prinz, 2003). However, clearer support for this interpretation requires measures of discipline at multiple developmental points.

### *Home-to-School Model*

Previous research indicates that children who display conduct problems in both the home and school settings are at considerable risk for a variety of adjustment problems into adolescence and adulthood (Caspi & Moffitt, 1995; M. J. Reid, Webster-Stratton, & Hammond, 2003). The present study provides data relevant to understanding the conditions and processes contributing to the generalization of conduct problems from home to school during early childhood. Parenting, both as assayed by hostile attribution and ineffective/irritable discipline, appears to primarily contribute to growth in conduct problems at school indirectly, via the facilitation of conduct problems at home that are then carried over to school. As agents located in a distal setting, parents appear to have little direct influence over their children's display of conduct problems at school. Rather, parents may influence children's social adjustment in the classroom and the peer group by engendering social behaviors at home that either more or less successfully prepare the child to accommodate the developmental challenges and tasks encountered in the school setting (Dishion, French, & Patterson, 1995).

The data indicate one exception to this pattern. Ineffective and irritable discipline, when accompanied by high levels of parental negative attributions about child misbehavior, evidenced a reliable, direct, prospective relationship to growth in child conduct problems at school. This finding supports the robustness and generality of the Attribution  $\times$  Discipline moderator effect. Because parents are not directly monitoring and responding to their children's behavior at school, it is likely that the theoretical model tested in this study is missing an important mechanism. The mechanism linking the Attribution  $\times$  Discipline interaction term to growth in school conduct problems may involve a failure by the parents to monitor child behavior, peer associates, experiences, and academic performance at school (Kilgore, Snyder, & Lentz, 2000). It may also entail a lack of collaboration with and support of teachers' efforts to foster children's academic skills and social adjustment (J. B. Reid & Eddy, 2003). This interpretation is consistent with research indicating that children's experiences at school also have a strong impact on their behavior at home; generalization flows in both directions (Snyder, Brooker, et al., 2003). Parents who are unskilled and who consistently make negative attributions about their child's abilities and behavior may simply not be interested in what happens at school or may fail to respond constructively to feedback and requests from their child's teachers.

### *A Broader Perspective*

This research supports the notion that children's adjustment involves multiple family processes and that these processes are co-constructed by parents and children. The interplay of family social processes and child adjustment unfolds over time and in-

volves peer and school as well as home settings. More specifically, key variables from cognitive and behavioral theories of parenting appear to interact to affect child development. The exact means by which this conjoint influence occurs is open to multiple interpretations. Attributions may operate as rules that govern parents' disciplinary reactions in a way that reduces tracking of child behavior and sensitivity to situational variation and developmental change in child problem behavior. Alternatively, hostile parental attributions may be directly communicated to children during parent-child discourse and serve as a source of social scripts and working models of relationships that children then apply to new social situations (Burks, Laird, Dodge, Pettit, & Bates, 1999). The interplay of parent attributions and discipline tactics, and their short-term reciprocal relation to ongoing child behavior, may be more clearly articulated by analyses of microsocial parent-child exchanges. Analyses of these exchanges could simultaneously probe attributions and code the overt social behaviors of parents and children as they occur in real time (e.g., Sanders & Dadds, 1992; Strassberg, 1995).

The interactive effects of discipline and attributions as well as the effects of discipline alone on growth in child conduct problems during the early elementary school years have interesting implications for intervention. Randomized-trial intervention research clearly indicates that improved parental discipline practices reduce child conduct problems (Forgatch & DeGarmo, 2002). The current findings suggest that intervention components that reduce parents' hostile attributions may increase parental engagement in intervention (Miller & Prinz, 2003). Such components may also mitigate parents' frequent relapses to irritable and noncontingent forms of discipline in the face of child countercontrol and may foster generalization over time and across settings.

Children play an active role in their own socialization and development. This role was apparent in the impact of child conduct problems on parent attribution and discipline. It also operates more subtly during reciprocal parent-child aversive exchanges (not described in this article), from which the measures of parents' irritable and ineffective discipline were derived (Snyder & Stoolmiller, 2002). Taken together, these findings suggest that discipline encounters are really co-constructed by the parent and the child rather than imposed on the child in a "top-down" fashion by the parent. Early child conduct problems accounted for a relatively small amount of variance in parental attributions and discipline, which may reflect the macro level (in contrast to the micro-level reciprocity of aversive behavior) at which child-to-parent effects were assessed in this analysis. However, it also suggests that parents' attributions, irritability, and use of ineffective discipline tactics may also be strongly influenced by a broader range of social-contextual and personality factors (Belsky, 1984), none of which were included in the models tested here.

### *Strengths and Limitations*

Several design and measurement limitations temper the interpretation of the findings. The data were derived from a passive longitudinal design, and thus observed relationships merit tentative causal inferences. The community sample was recruited from one neighborhood in one city and comprised at-risk children from economically disadvantaged and socially underresourced families. The degree to which the findings generalize to other samples is unknown. The data on parent attributions were derived from a

small number of vignettes, and the data on ineffective and irritable discipline were derived from 4 hr of parent-child interaction in a semi-natural setting. These methods may result in a restricted range on these parenting variables and entail measurement reactivity and bias.

However, this research has several methodological advantages that increase confidence in the replication of the findings. The multimethod and multiagent measurement tactics used to specify constructs in the structural equation modeling and latent growth models minimize method and/or agent overlap as alternate explanations for observed relationships. The data were collected in a panel design. Consequently, the contribution of child conduct problems to discipline and parent attribution and the contribution of attribution and discipline to growth trajectories for child conduct problems at home and school were examined prospectively. Finally, the sample of children and families represented a full range of conduct problems. As a consequence, the strength of the observed empirical relationships should not have been diminished by restriction in the range of key variables.

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