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Double Jeopardy: Child and School Characteristics That Predict Aggressive-Disruptive Behavior in First Grade

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Abstract

High rates of aggressive-disruptive behavior exhibited by children during their initial years of elementary school increase their risk for significant behavioral adjustment problems with teachers and peers. The purpose of the present study was to examine the unique and combined contributions of child vulnerabilities and school context to the development of aggressive-disruptive student behavior during first grade. Parent ratings and child interviews assessed three child characteristics associated with risk for the development of aggressive behavior problems in elementary school (aggressive-disruptive behaviors at home, attention problems, and social cognitions) in a sample of 755 first-grade children in four demographically diverse American communities. Two school characteristics associated with student aggressive-disruptive behavior problems (low-quality classroom context, school poverty levels) were also assessed. Linear and multilevel analyses showed that both child and school characteristics made independent and cumulative contributions to the development of student aggressive-disruptive behavior at school. Although rates of student aggressive-disruptive behavior varied by gender and race, the predictive model generalized across all groups of children in the study.

Children who exhibit high rates of aggressive-disruptive behavior during their initial years of elementary school are at increased risk for a range of personal and social difficulties and more enduring patterns of aggression (Broidy et al., 2003; Kim-Cohen et al., 2005). For instance, research has shown that approximately 65% of children who enter elementary school exhibiting elevated levels of aggression experience significant behavioral difficulties and associated educational problems in school 2 years later (Kim-Cohen et al., 2005). In addition, students who show high rates of disruptive and aggressive behaviors during the first years of school are also more likely than well-behaved students to repeat a grade early in elementary school (Beebe-Frankenberger, Bocian, MacMillan, & Gresham, 2004), require special education services (Wagner, Kutash, Duchnowski, Epstein, & Sumi, 2005), and

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exhibit serious conduct problems in later adolescence (Broidy et al., 2003). Given these potential outcomes, it is important to understand etiological factors related to the early development of student aggression and disruptiveness. The current study examines the effects of both child vulnerabilities and school variables on students' display of aggressive-disruptive behavior during first grade.

Developmental models of "early-starting" conduct problems at school emphasize the key role that family factors play in the early development of child aggression, including harsh and ineffective parental discipline, family conflict, and lack of parental involvement (Dishion & Patterson, 2006; Patterson, 2002). According to Patterson (2002), these factors can lead to the initial emergence of aggressive-disruptive behavior problems for children in their homes, which then generalize to the school setting during their early years. When these behavior problems emerge in the school setting, they may affect social transactions with teachers and peers that, in turn, lead to further escalations in children's levels of aggression and classroom disruption.

Although aggressive-disruptive behavior problems at home can increase risk for similar problems emerging at school during the early grade levels, research suggests that the behavior problems parents observe are not entirely consistent with what teachers report (Achenbach, McConaughy, & Howell, 1987). This suggests that, beyond children's aggressive behavior at home, there are additional child and school factors that may fuel their risk for evidencing aggressive-disruptive behaviors in the school setting. More research is needed to ascertain individual and school contextual factors that, in addition to child behavior problems at home, may contribute to the early emergence and escalation of aggressive-disruptive student behavior at school. In the present study, we investigated the unique and combined influence of child characteristics and school risk factors on student aggressive-disruptive behavior in first grade, as well as their interplay with child aggressive propensities (based on early family socialization experiences) in this process.

Child Characteristics Associated With Aggressive-Disruptive Behavior at School

As children enter first grade they face heightened expectations for behavioral compliance, sustained attention, and social integration (Kellam, Ling, Merisca, Brown, & Ialongo, 1998; Perry & Weinstein, 1998). The capacity to follow classroom rules, attend to learning tasks, and inhibit aggression when managing conflicts become critical for early school behavioral adjustment and learning (Kim-Cohen et al., 2005; Pianta & Stuhlman, 2004). Children who experience difficulties in these domains show increases in disruptive behavior problems during the first 2 years of elementary school (Perry & Weinstein, 1998). In addition to aggressive behavior patterns learned at home, two child characteristics may increase students' risk for early-developing aggressive-disruptive behavior problems in the school setting: attention problems and social-cognitive deficits.

Child Inattention

Child attention skills play a central role in promoting behavioral socialization during children's early years in school (Barkley, 2003; Becker & McCloskey, 2002; Moffitt, 1990). The capacity to stay on-task in the classroom, show self-reliance and initiative, and complete work effectively predicts academic achievement and social adjustment in elementary school (Hughes & Kwok, 2006; Perry & Weinstein, 1998). Conversely, children who show attention problems in school, including poor task persistence, distractibility, and impulsivity, typically experience gross levels of maladjustment, ranging from academic achievement to social relations with teachers and peers (Barkley, 2003; Bellanti, Bierman, & the Conduct

Problems Prevention Research Group [CPPRG], 2000; Rabiner, Malone, & CPPRG, 2004). By making it difficult for children to adjust to the academic and social demands of the first-grade context, attention problems may increase child frustration and negative reactivity, promoting aggressive and oppositional behavior problems.

Researchers have been able to disentangle the effects of child inattention and aggression on individual's long-term social behavior (Barkley, 2003; Hinshaw, Lahey, & Hart 1993; Moffitt, 1990). In her seminal work, Moffitt (1990) showed that attention problems predicted increases in children's levels of aggression during their first years in elementary school, after accounting for their initial aggression at home. Furthermore, aggressive students with attention deficits fared significantly worse on later measures of antisocial behavior than aggressive students without attention deficits.

Social-Cognitive Deficits

Disruptive-aggressive behavior problems are often accompanied by social-cognitive deficits and distortions, including poor social problem-solving skills and hostile attributional biases (Crick & Dodge, 1994). Social cognitions affect children's school adaptation and may serve as key mechanisms fostering the generalization of child disruptive-aggressive behavior from home to school, rendering children more susceptible to reactive aggression and noncompliant behavior at school (Dodge, 2006; Dodge, Bates, & Pettit, 1990). Research shows that aggressive children generate fewer nonaggressive strategies for solving interpersonal problems than do their nonaggressive classmates and are more likely to attribute hostile intentions to others in ambiguous situations (Dodge, 2006; Dodge, Laird, Lochman, Zelli, & CPPRG, 2002). In their longitudinal study, Lansford et al. (2006) showed that these kinds of distortions and deficits in thinking (e.g., making hostile attributions, generating aggressive responses) were evident among kindergarten students and predicted their aggressive school behavior in Grade 3 and later in adolescence.

Although prior research supports the existence of a relationship between aggressive problem solving and hostile attributions engendered through family socialization experiences with children's aggressive-disruptive behavior at school, the unique and shared effect of these social-cognitive deficits and child attention problems has not been studied. In addition, prior research has not examined the effect of different school contexts on the evocation of these child vulnerabilities and their cumulative effect on child aggressive-disruptive behavior at school.

School Characteristics Associated With Student Behavioral Adjustment

There is growing evidence that schools can inhibit student behavior problems or, alternatively, provoke and support their development among vulnerable students by virtue of certain structural features (Esposito, 1999; Thomas, Bierman, & CPPRG, 2006). Research on the contributions of the school context to the onset and maintenance of child aggressive behavior has revealed that school poverty and classroom quality are important factors associated with levels of student aggression and disruptiveness.

School Poverty

The level of financial resources available to schools and overall student poverty has been linked to children's behavioral functioning in schools (Battistich, Solomon, Kim, Watson, & Schaps, 1995; Esposito, 1999). Elementary schools located in impoverished areas may be at a great disadvantage with respect to their ability to furnish students with good and reliable supplies, retain qualified teachers, and make available early intervention programs. Such disadvantages are considered important determinants of the levels of aggression among students (Battistich et al., 1995; Perry & Weinstein, 1998). Similarly, researchers have

documented associations between overall student poverty (e.g., percentage of students qualifying for free or reduced-cost lunch) and school-level rates of student aggression (Battistich et al., 1995; Thomas et al., 2006). Thomas et al. (2006) showed that the overall level of student poverty at a school was associated with increases in school-level student aggression from Grades 1 to 3 ($r = .36$, $p < .001$). Their finding suggests that student poverty reflected (or contributed to) a school context that impeded the effective social control of aggressive student behavior. However, more research is needed to better understand the mechanisms by which school-level student poverty contributes to the development of aggressive-disruptive behaviors during the early grade levels. One possibility is that high rates of student poverty contribute to under-resourced and nonoptimal classroom contexts, in which deficits in teacher management skills and teacher–student relationships undermine positive social control.

Classroom Context

The social quality of classrooms is an important factor contributing to the socialization of aggression at school. Accumulating evidence suggests that classrooms that contain a high proportion of disruptive, aggressive students significantly undermine classroom quality by creating social milieus that elicit and reinforce aggressive reactions from individual children, which, in turn, promote recurrent and escalating aggressive behavior problems in school (Barth, Dunlap, Dane, Lochman, & Wells, 2004; Kellam, Ling, Merisca, Brown, & Ialongo, 1998; Thomas et al., 2006). Such classroom conditions, to some extent, may reflect inadequate classroom management practices by teachers and poor teacher– child relations (Barth et al., 2004; Pianta & Stuhlman, 2004; Yates & Yates, 1990). High-quality teachers manage classrooms effectively by establishing predictable routines, monitoring their students, preventing negative behavior, and using rules and natural consequences consistently (Yates & Yates, 1990). These teachers also refrain from using authoritarian discipline to address student misbehavior (Webster-Stratton et al., 2001). Research has shown that students attending classrooms characterized by these positive management practices show less behavior problems than students in classrooms characterized by more punitive teacher behaviors (Webster-Stratton et al., 2001; Yates & Yates, 1990). Moreover, as early as kindergarten, teacher– child relations characterized by teacher sensitivity, warmth, and support have been shown to promote student social competence and reduce rates of classroom behavior problem (Rimm-Kaufman et al., 2002). Rimm-Kaufman et al. (2002) found that kindergarteners with more sensitive and supportive teachers evidenced fewer aggressive behaviors and spent less time off-task in the classroom, as compared to other students with less supportive and more strained relations with their teachers.

Although past research has documented that school-level poverty and classroom climate each have a significant effect on student aggressive-disruptive behavior, the association between these two school context variables has not been well studied. In addition, it is not clear whether school-level poverty has an effect on student aggression that is independent of its association with poor classroom context, or whether school poverty undermines student social control primarily because of its relation with poor-quality classroom contexts. Finally, the potential cumulative effect of different combinations of risk factors (child vulnerabilities and school context variables) warrants study.

Present Study

This study examined the unique and combined contributions of child vulnerabilities (home aggression, attention problems, aggressive social problem-solving, and hostile attributions) and school context (low-quality classroom climates, high rates of student poverty) to child aggressive-disruptive behavior at school over the course of the first grade. It was hypothesized that each of the child and school variables predicts the emergence and growth

of student aggressive-disruptive behavior in first grade. Past research has not provided a basis for hypotheses regarding the interplay between child vulnerabilities and risky school contexts, but we anticipated that these two domains of risk contribute to the prediction of student aggression in independent and cumulative ways.

In addition, this study examined potential gender and race effects in the predictive model. Previous research suggests that boys may be more susceptible than girls to the influence of aggressive-disruptive peers in the classroom (Stormshak et al., 1999). Moreover, relative to other children, African American children attending schools in urban areas may be at particular risk for exposure to poor-quality classrooms, socioeconomic disadvantage, and other community-level risks (e.g., community violence exposure) that may affect rates of aggressive behavior (Estell, Cairns, Farmer, & Cairns, 2002; Guerra, Huesmann, & Spindler, 2003; Henry et al., 2000; Huston, Mcloyd, & Garcia Coll, 1997; Thomas et al., 2006). However, irrespective of student gender and race, we expected the predictive model to hold for all students in the present study.

Method

Participants

This study used data from a larger longitudinal investigation of the development and prevention of conduct disorders, known as FAST Track (see CPPRG, 1992). Participants were 755 children who were in one of the 194 first-grade classrooms assigned to the normative or high-risk control conditions of the prevention trial. These were children in the "universal" rather than "selected" sample, so they included all children attending participating first-grade classrooms. The classrooms were drawn from 27 schools in four geographic sites (Durham, North Carolina; Nashville, Tennessee; Seattle, Washington; and rural central Pennsylvania). Schools were selected from each site based upon enrollment of economically disadvantaged students and high crime neighborhoods.

The sample included 436 (57.7%) boys and 319 (42.3%) girls. In kindergarten, when the sample was selected, the mean age was 6.5 years ($SD = 0.48$). The sample was 46.2% African American ($n = 349$), 49.8% European American ($n = 376$), and 4% individuals of other ethnicities ($n = 30$). The socioeconomic status distribution of the sample was low to middle, according to the Hollingshead four-factor formula (Hollingshead, 1975). The percentage of children receiving free or reduced-cost lunch averaged 49%, ranging from 23% in the rural schools to 71% in the urban schools that participated in the study.

Measures

Child aggressive-disruptive behavior at home—The Externalizing Scale of the Child Behavior Checklist—Parent Report Form (PRF; Achenbach, 1991) was used to assess child aggressive-disruptive behavior problems at home. This reliable and well-validated scale contains a list of 33 externalizing behavior problem items that parents rate on a three-point scale. Items reflected oppositional, aggressive, and disruptive behaviors. The Externalizing Scale has been shown to have strong internal consistency, with alphas ranging from .90 to .93 (Nix, 2001).

Child attention problems—Child attention problems and related concentration and impulse-control difficulties were assessed with kindergarten teacher ratings on the Attention Problems scale of the Child Behavior Checklist—Teacher Report Form (TRF; Achenbach, 1991). This scale includes 15 items reflecting inattention, concentration difficulties, underachievement, and task-oriented behavior problems, each rated on a three-point scale.

The Attention Problems scale has demonstrated adequate internal consistency, with alphas ranging from .82 to .90 (Rains, 2003).

Child social problem-solving skills and hostile attributions—On the Social Problem-Solving Measure (SPSM; Dodge et al., 1990), children viewed a series of eight drawings and listened to vignettes depicting peer entry or peer conflict problems. They were asked what the story character could do to solve the problem and were prompted to give three different solutions to each problem. Responses were coded as "prosocial/competent" or "aggressive/inept." The percentage of aggressive/inept responses across stories was analyzed in this study. The measure demonstrated adequate internal consistency (α = .70 across vignettes). Interrater agreement, assessed for 15% of the data, was satisfactory (κ = .94).

The Home Inventory With Child (HIWC; Dodge et al., 1990) assessed hostile attributional biases. Children were shown eight drawings describing mild and ambiguous peer provocations (e.g., being ignored at entry, being bumped or pushed). For each incident, children were asked why they thought the event occurred. Child attributions were coded as "hostile," "nonhostile," or "I don't know/other." The percentage of hostile attributions was used in this study. The HIWC has demonstrated adequate reliability (α = .80) and interrater agreement was satisfactory (κ = .90), based on 15% of the data.

School poverty—The percentage of children who received free and reduced-cost lunch was used as the measure of student poverty at each school. Information on school poverty was obtained from school administrators.

Classroom observations—Observations were conducted to assess the quality of classroom climate, reflecting the interplay of effective classroom management practices, teacher involvement and support of students, and student engagement. Each classroom was observed twice on different days by trained research assistants, for 30-min observations. The observers rated the atmosphere of each classroom using a computer-assisted rating program (ASKER; Tapp & Fiel, 1991), which included 10 items from the Classroom Rating Form (CRF; Solomon, Watson, Delucci, Schaps, & Battistich, 1988). These ratings focused on the atmosphere of the entire classroom (e.g., level of disruption during academic time, use of problem solving during conflicts, adherence to rules, teacher responsiveness to student's needs and feelings, level of teacher criticism versus supportiveness) and ranged from 1 (*low*) to 5 (*high*) with descriptions provided at the rating end points and at the midpoint. To ensure reliability between the observers, the observers from each site were trained for approximately 6 weeks. Training consisted of watching videotapes and participating in practice sessions that were in situ. Interrater reliability was collected for 12% of the observations, demonstrating kappa coefficients across the 10 items that ranged from .62 to .81. The scale also showed a high level of internal consistency (α = .92). Ratings were averaged across observers and across items to give each classroom an overall score for classroom climate.

Child aggressive-disruptive behavior at school—The Authority Acceptance scale of the Teacher Observation of Classroom Atmosphere—Revised (TOCA-R; Werthamer-Larsson, Kellam, & Wheeler, 1991) was used to assess child aggressive-disruptive behavior at the beginning and end of first grade. The scale included 10 items describing disobedient and aggressive behavior problems (e.g., yells at others, fights, breaks rules). For each item, teachers rated each child using a six-point Likert scale to describe the frequency of the problem behaviors over the past 3 weeks, ranging from 1 (*Almost Never*) to 6 (*Almost Always*). Total scale scores were averaged to represent each child's level of aggressive-

disruptive behavior at both time points of interest. For the present sample, the Authority Acceptance scale demonstrated substantial internal consistency ($\alpha = .95$) and sufficient test–retest reliability ($r = .73$).

Procedures

During the summer prior to the child's entry into first grade, a team of trained graduate-level research assistants visited homes of each participant and interviewed his or her primary caregiver. During these interviews, the caregiver completed the PRF. The interviewer read each item to the caregiver, who responded with a rating on his or her child's behavior. At the same time, a second assistant met with the child participant and administered the SPSM and HIWC. Parents received monetary compensation for their participation in the interview; children received stickers and snacks.

At the end of the kindergarten year, a packet of measures including the TRF was left with classroom teachers, who completed the measures and returned them to the project office of the larger study. In the fall and spring of first grade, a research assistant visited teachers to collect teacher ratings of child aggression. At both assessment periods, the assistant administered the TOCA-R during face-to-face interviews. Teachers received monetary compensation for their participation.

Classroom observations were conducted during the spring of the first-grade year. Using laptop computers, trained observers visited each classroom to collect data on the individual students who were members of the "high-risk" control or "normative" samples in the larger intervention study. Classrooms were observed over 2 half-hour sessions. After collecting data on the students, observers completed the CRF to describe the quality of the classroom atmosphere. The number of classroom ratings available for each class depended upon the number of students observed in the classroom; the mean number of observations was 4.4 per class.

Analyses

Three primary sets of data analytic procedures were conducted. First, correlation analyses were conducted to evaluate the degree to which variables reflecting child characteristics (attention problems and social-cognitive functioning assessed in kindergarten) and school context (school poverty and the quality of the first grade classroom context) predicted child aggressive-disruptive behavior over the course of first grade. This included simple and partial correlations, to control for the influence of aggression exhibited by children prior to the two time points of interest. The next step in the data analyses was to conduct a series of hierarchical linear modeling (Raudenbush & Bryk, 2002) procedures to examine the independent and cumulative contributions of the study predictors on ratings of child aggressive-disruptive behavior in the fall and over the course of the first grade. Hierarchical linear modeling procedures were chosen to account for the nested structure of the data and interest in classroom-level effects in the predictive model. Finally, analysis of variance procedures were used to examine the effects of different patterns of risk factors in predicting aggressive-disruptive behavior in first grade. For all analyses, an alpha level of .05 was used to determine significance.

Results

Preliminary Analyses

Descriptive statistics and preliminary correlation analyses were conducted to examine basic features of the data and the degree to which covariation existed among the predictors, respectively. Table 1 shows correlations, statistical means, standard deviations, and ranges

for scales used to measure child and school variables of interest. As shown, mean scores for the scales were in the low to moderate range for the sample. Among the measures of child vulnerabilities, the highest correlations were found between child home aggression and attention problems and between aggressive problem solving and hostile attributions. A significant yet low degree of association was found between the two school context factors. Levels of school poverty were more significantly correlated with attention problems and hostile attributions. Although not displayed in the table, family socioeconomic status was significantly correlated with three of the child vulnerabilities (home aggression, $r = .20$, $p < .001$; attention problems, $r = .31$, $p < .001$; and hostile attributions, $r = .12$, $p < .01$) and with school poverty ($r = .25$, $p < .001$), and hence was included in the model as a control variable in subsequent analyses. None of the correlations among the predictor variables was strong enough to present a problem involving multicollinearity, making it possible to examine their independent contributions as predictors of school aggression.

Predicting Risk for the Emergence of Aggressive-Disruptive Behavior in First Grade

Correlations—Simple correlations were first computed between each of the predictor variables and child aggressive-disruptive behavior at the beginning of the first grade. Then, partial correlations were computed to determine the degree to which each of these variables added to the prediction of child school disruptiveness and aggression after controlling for home aggressive-disruptive behavior. As shown in the first two columns in Table 2, all of the variables except aggressive problem solving were significantly related to child aggressive-disruptive behavior in the fall of the first grade, after controlling for child levels of aggressive-disruptive behavior at home. Thus, support was found for the hypothesis that child vulnerabilities (attention problems and hostile attributions) and the school context (school poverty and the quality of the classroom context) were predictive of children's risk for the emergence of aggressive-disruptive school behavior during their initial transition to the first grade.

Multilevel modeling—To test the full prediction model, a hierarchical linear model was estimated. Child gender (dummy coded: Male = 1, Female = 0) and race (dummy coded: African American = 1, other = 0), and family socioeconomic status were included as Level 1 covariates. Child home aggression, kindergarten attention problems, aggressive social problem-solving responses, and hostile attributions also served as Level 1 predictors. Classroom climate served as a Level 2 predictor. School poverty served as a Level 3 predictor. Initially, interactions among each of the predictors and child race and child gender were also included to determine whether the predictive model was moderated by race or gender. Main effects for gender and racial group were evident, as boys exhibited higher rates of aggressive-disruptive school behavior than girls (boys $M = 1.46$ vs. girls $M = 1.01$, $p < .001$), and African American children in the sample received higher ratings of aggressive-disruptive behavior than the European American children (African American $M = 1.54$ vs. European American $M = 1.03$, $p < .001$). However, none of the interaction terms with gender or race was statistically significant (ps > .10). Hence, a "trimmed" model was recalculated without the interaction terms.

The results of the trimmed hierarchical linear model predicting teacher ratings of child aggressive-disruptive behaviors in first grade are presented in Table 3. As shown, 74.6% of the variance in school aggressive-disruptive behavior was explainable at the individual level (Level 1), 18.8% at the classroom level (Level 2), and 6.6% at the school level (Level 3). Child home aggression and attention problems were among the child vulnerabilities that made significant, unique contributions to aggression in the fall of first grade. First-grade classroom context also accounted for a significant amount of variance in predicting child

aggressive-disruptive behavior during the early months of the first grade. School poverty did not make a unique contribution with classroom climate in the model.

Predicting Change in Aggressive-Disruptive Behavior Across the First-Grade Year

Correlations—In addition to predicting the initial emergence of aggressive-disruptive behavior at Grade 1, we were interested in predicting change in aggressive-disruptive behaviors in the school setting from the beginning to the end of the first-grade year. First, simple correlations were computed to examine the degree to which child vulnerabilities (assessed in kindergarten) and the school context (assessed in first grade) predicted the level of child aggressive-disruptive school behavior at the end of first grade. Then, partial correlations were computed to determine the degree to which each of the variables added to the prediction of change in aggressive-disruptive student behavior across the first-grade year, after controlling for Grade 1 fall aggressive-disruptive behavior as well as aggressive-disruptive behavior displayed at home. As shown in Table 2, all of the predictors, except aggressive problem-solving, were related to child aggressive-disruptive behavior at the end of first grade. With the exception of both social cognitive variables, each of the hypothesized predictors was correlated with spring aggressive-disruptive behaviors, after controlling for aggressive-disruptive behavior displayed at the start of the first-grade year and child levels of aggressive-disruptive behavior at home.

Multilevel modeling—A second hierarchical linear modeling was used to test whether child, classroom, or school risk factors predicted growth in aggression across the first grade year, after accounting for levels of aggressive-disruptive behavior in the fall of first grade. All of the predictors were identical to those used in the first hierarchical linear modeling, with the addition of fall aggressive-disruptive behavior as a Level 1 covariate to control for a child's initial level of aggression at the beginning of first grade. Teacher-rated levels of aggressive-disruptive behavior in the spring of Grade 1 was the outcome variable. Interactions between each of the predictors and child race and child gender were again tested to determine whether the predictive model was moderated by race or gender. None of the interaction terms with race or gender was statistically significant ($ps > .10$), so the interaction terms were dropped from the model. Results are presented in Table 4, showing that 74.4% of the variance in school aggressive-disruptive behavior was explainable at the individual level (Level 1), 14.5% at the classroom level (Level 2), and 10.6% at the school level (Level 3). After accounting for levels of aggressive-disruptive behavior in the fall of first grade, child home aggression made a significant, unique contribution to aggression in the spring of first grade, whereas attention problems, aggressive problem-solving orientations, and hostile attributions did not. First-grade classroom context and school poverty no longer accounted for additional variance beyond the individual-level predictors.

Group comparisons—Table 5 shows results from the final analysis examining the effects of different patterns of the three most influential risk factors (e.g., child aggressive-disruptive behavior at home, child attention problems, and the quality of the first-grade classroom context) in predicting aggressive-disruptive behavior in first grade. T-scores were used to identify children who had scores on home externalizing behaviors or kindergarten attention problems that placed them in the "clinical risk" range (i.e., T scores of 63 or above on the Parent Report Form and Teacher Report Form). A median split was used to divide classrooms in the sample into those representing "high-quality" versus "low-quality" contexts for learning. Children were grouped according to their "risk profile" on these three indicators of risk. Post hoc comparisons of group means, adjusted for the alpha inflation associated with multiple comparisons, revealed three levels of risk for first-grade aggression. In general, the lowest rates of first-grade aggression were found among the children with no risk factors. Increasing rates of first-grade aggression were associated with children who

exhibited only one risk factor. The highest rates of first-grade aggression generally were exhibited by children who had two or more risk factors, although the difference between having one and two additional risk factors was not statistically significant.

Discussion

Consistent with previous research, child aggressive-disruptive behavior at home was associated with aggressive-disruptive behavior at school in first grade. Although high rates of home aggression may confer particular risk for the development of school aggression, findings also suggest that risk is increased with the presence of additional child vulnerabilities. In particular, the results of this study confirm that both child inattention and poor-quality classroom contexts may amplify risk for student aggressive-disruptive behavior at school. Child characteristics (aggressive-disruptive behavior at home, attention problems) accounted for most of the variance explained in school aggression (approximately 74%), but school factors (particularly low-quality classroom contexts) accounted for additional variance, suggesting that school variables significantly increase child risk for school aggressive-disruptive problems. These results confirm earlier developmental research suggesting that high rates of aggressive behavior exhibited at home prior to kindergarten indicate risk for serious behavioral adjustment difficulties for students as they enter into formal schooling (Dishion & Patterson, 2006). Efforts to identify high-risk aggressive children prior to school entry and to intervene in family and preschool contexts to foster positive social development and school readiness are therefore important and well advised (Campbell & von Stauffenberg, 2007). Such prevention and early intervention efforts, however, might increase effectiveness by attending to concurrent child vulnerabilities, particularly attention problems, and to classroom context quality during the initial years in elementary school.

Previous research has documented links between child attention problems and aggressive-disruptive behaviors (Barkley, 2003; Moffitt, 1990). In this study, attention problems were predictive of child aggressive-disruptive school behaviors, even with the concurrent influence of home aggression controlled. At least two different mechanisms may explain the independent contributions of inattention to child disruptiveness at school. First, children who find it difficult to sustain and modulate their attention in the classroom and to orient themselves to completing work-related tasks are likely to experience academic problems in school, including difficulties developing reading skills (Barkley, 2003; Rabiner et al., 2004). These academic struggles may contribute to feelings of embarrassment and frustration, which, in turn, may elicit off-task behaviors and reactive aggression.

Second, the off-task and noncompliant school behaviors of inattentive children may alienate teachers, who complain that these children do not listen to directions or follow rules and fail to complete assignments. In accordance with previous research (Barkley, 2003), frustrated teachers may employ, in turn, ineffectual and negative control strategies and rely on frequent commands, threats, and other aversive measures to increase compliance. Similar to the processes described by Dishion and Patterson (2006) within the family context, high levels of negative teacher control attempts during early grades may engender coercive child–teacher interchanges, leading to increases in child oppositionality and other behavior problems in school (Webster-Stratton et al., 2001). In this study, low-quality classroom contexts and school poverty were both associated with elevated rates of student aggressive-disruptive behavior at school, although only the former accounted for unique variance. This is consistent with results from experimental studies suggesting that classroom contexts characterized by disapproving teachers and disengaged students undermine the effectiveness of the learning environment and elicit and reinforce disruptive behavior. For example, when Thomas, Becker, and Armstrong (1968) manipulated teacher responses to students

experimentally, they found that high rates of disapproving control strategies (e.g., criticism, scolding, threatening) combined with the withholding of approving strategies (e.g., gestures, praise) led to a 20% increase in student disruptive behaviors, suggesting that students were reacting negatively to teacher coercive control tactics. In addition, high rates of student disruptive behavior may challenge teacher's management capacities, by introducing peer modeling and support systems that encourage oppositional and aggressive student responding.

A number of investigators have documented that having a high proportion of students in class with aggressive-disruptive behavior problems has an escalating effect on externalizing behavior problems. For instance, Kellam and colleagues (1998) found that the level of classroom aggression to which first-grade students were exposed had an effect on student aggression when transitioning into middle school. More recently, Barth et al. (2004) found that children's exposure to classrooms with high concentrations of aggressive-disruptive students led to increases in their individual levels of aggression and concomitant setbacks in their academic and social functioning across a span of 2 years. In part, the negative influence of aggressive-disruptive classmates may stem from their effect on social norms. That is, when aggressive behaviors are prevalent within a group, peers become more accepting of aggression, viewing it as normative rather than socially undesirable (Henry et al., 2000; Stormshak et al., 1999). In accordance with recent research (Estell et al., 2002), it is possible that early aggressive children affiliate with peers who share similar aggressive tendencies, thereby creating situations within the classroom for their antisocial activities to become synchronized, and for aggressive children to achieve high social status and support for their aggressive and disruptive behaviors.

Consistent with previous research (Stormshak et al., 1999), boys exhibited higher rates of school aggression than girls. However, gender did not interact significantly with any of the predictors of school aggression, suggesting that, even though boys showed higher rates of aggression than girls, the developmental influences of home aggression, inattention, and school context affect the school disruptiveness of boys and girls in similar ways. Main effects also emerged for race, as African American children in the sample exhibited higher rates of school disruptive behavior than the European American children. In interpreting these findings, it is important to note that a majority of the African American children in the sample attended schools that were extremely economically challenged. For example, a disproportionate number of African American participants attended schools in urban areas that served student bodies from predominantly impoverished neighborhoods (with over 80% qualifying for free or reduced-cost lunch). Rates of many risk factors (e.g., low family income, neighborhood crime rates) tended to be higher for the African American families in the sample compared to the European American families (who were also disproportionately disadvantaged compared with population norms). For some African American students living and attending schools in these kinds of challenging contexts, aggressive behavior may have an important self-protective functional value, as has been discussed in previous research (Guerra et al., 2003; Henry et al., 2000). For the most part, however, despite mean level differences, the factors studied here proved equally useful in predicting the emergence and growth in school disruptive behavior for African American and European American children.

Limitations

Several limitations to the study should be pointed out. First, although the design was longitudinal, caution should be exercised in positing causative connections between purported risk factors and outcomes in first grade. Second, the decision to use median splits for classification of classroom quality in examining group differences on aggressive-

disruptive behavior, albeit useful, is somewhat controversial. Concerns have been raised about the utilization of median splits to divide study samples for between-group comparisons (MacCallum, Zhang, Preacher, & Rucker, 2002). In particular, the dichotomization of the sample between "low" versus "high" on classroom quality may have truncated the possible effects of school risks. Another limitation is that interobserver reliability checks were completed for only 12% of the observations, which is below the accepted minimum of 20% for calculating interobserver agreement (Leslie & O'Reilly, 1999, p. 169). Therefore, observational findings should be interpreted with caution.

In addition, this study focused on particular sets of contextual factors, and other factors that were not considered may also have influenced children's development of aggressive-disruptive behavior in the sample. For instance, it is likely that children's direct and indirect encounters with violence in their neighborhoods influenced their rates of aggression in the schools (Guerrera et al., 2003).

Implications for Practice and Future Research

Despite the stated limitations, results of the present investigation have implications for practice and research. Findings imply that, in addition to factors in the home, preventive interventions should target both individual and school context factors to reduce problems associated with student disruptive behaviors. Three key factors appear central to promotion and prevention efforts targeting early aggressive-disruptive behaviors at school among economically disadvantaged children: (a) improving supportive socialization at home to enhance self-control, particularly the inhibitory control of disruptive-aggressive behaviors; (b) enhancing preschool and kindergarten education opportunities to strengthen student sustained attention skills and learning engagement; and (c) providing professional development and support to enhance teacher skills at effectively engaging, connecting with, and organizing student behavior, particularly in classrooms containing many at-risk students.

Future research could extend the current study by better explicating the mechanisms associated with classroom context effects on child behavioral adjustment and self-control skill development. Specifically, it would be useful to understand more about the transactional contributions of teacher skill and student classroom composition to classroom management practices. Such research might also clarify the potential benefits to students of preventive interventions that alternatively strive to improve teacher-focused professional development and training in classroom management (enhancing teacher skill), or to distribute at-risk students more effectively across classrooms (reducing student challenge), or to implement classroom-level interventions designed to affect peer norms (such as the Good Behavior Game). In addition, future research could expand the predictive model by examining other contextual variables that might affect the functional adaptability of aggressive behavior at school, and thereby account for increases in aggression for particular populations of students, such as neighborhood risks including exposure to community violence and personal victimization by peers (Guerra et al., 2003). Moreover, a worthy direction for future investigations is determining whether individual and school factors studied in the present study are predictors of a wider spectrum of aggressive behaviors, including relational forms of aggression, during children's initial years in elementary school.

This study highlights the cumulative effect of multiple risk factors, documenting the independent and additive role of home aggression, child inattention, and classroom context in affecting child aggressive development at school. Future research may clarify additional risk factors, as well as explore the specific mechanisms whereby these factors influence the early development of disruptiveness and aggression in children during their initial years of

formal schooling. This would provide an enriched research base to guide preventive interventions at schools to head off more serious, chronic behavioral outcomes in subsequent school years and developmental stages.

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Table 1

Intercorrelations and Descriptive Statistics Among Predictor Variables

Predictor Variable	1	2	3	4	5	6
1. Home aggression	—	.26**	.04	.07	.07	.14*
2. Inattention		—	.12*	.12*	.27**	.09
3. Aggressive problem solving			—	.26**	.06	.01
4. Hostile attributions				—	.23**	.08
5. School poverty					—	.12*
6. Classroom climate						—
M	15.0	13.7	.82	.00	.00	.01
SD	8.70	10.4	.64	1.00	1.00	.99
Range	0 to 48	0 to 38	0 to 3.92	−2.3 to 1.31	−2.08 to 1.70	−2.45 to 5.00

Note. The scores for hostile attributions, classroom aggression, and school poverty were standardized within this sample and hence represent *z* scores.

* $p < .01$.

** $p < .001$.

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Table 2

Correlations Between Child Characteristics/School Context and Child Aggressive-Disruptive Behavior in the Fall and Spring of First Grade

	Fall		Spring		
				Partial Correlations	
Predictor Variable	**Simple Correlations**	**Partial Correlations**	**Simple Correlations**	**School**	**Home and School**
Home aggression	.35**	—	.34**	.14**	—
Attention problems	.29**	.20**	.32**	.14**	.12**
Aggressive problem solving	.09	.05	.08	.02	.02
Hostile attributions	.12*	.12*	.19**	.09	.11
School poverty	.16**	.13**	.20**	.12**	.13**
Classroom climate	.25**	.23**	.26**	.10*	.10*

Note. In the partial correlations for the fall of Grade 1, the contribution of home aggression was controlled. In the partial correlations for the spring of Grade 1, rates of aggressive-disruptive behavior in the fall of first grade were controlled in the first set of partial correlations; rates of aggressive-disruptive behavior at home (in kindergarten) and at school (fall of first grade) were controlled in the second set of partial correlations.

* $p < .01$.

** $p < .001$.

Table 3

Predicting Aggressive-Disruptive Behavior in the Fall of First Grade

Predictor	*B*	*SE*	*T* Value
Intercept	−.25**	.09	−2.69
Family SES	.01	.04	.17
Gender	.27***	.08	3.47
Race	.20	.11	1.82
Home aggression	.24***	.04	6.17
Attention problems	.16***	.04	3.56
Hostile attributions	.04	.04	.94
Aggressive problem solving	.01	.04	.16
Classroom climate	.18***	.05	3.64
School poverty	.05	.07	.62

	Random Effects		
Level	Covariance Estimate Unconditional Model	*SE*	Percentage of Total Variance at Each Level
Level 3 (School)	.065	.037	6.6
Level 2 (Classroom)	.186	.052	18.8
Level 1 (Individual)	.738	.048	74.6

Note. SES = socioeconomical status.

* $p < .05$.

** $p < .01$.

*** $p < .001$.

Table 4

Predicting Change in Aggressive-Disruptive Behaviors Across the First Grade Year

Predictors	*B*	*SE*	*T* Value
Intercept	−.20**	.07	−3.03
Fall aggressive-disruptive behavior	.64**	.03	19.15
Family SES	.03	.03	.87
Gender	.25***	.06	4.09
Race	.19*	.08	2.37
Home aggression	.10**	.03	3.17
Attention problems	.07	.03	1.94
Hostile attributions	.04	.03	1.37
Aggressive problem solving	−.01	.03	−.31
Classroom climate	.05	.04	1.26
School poverty	.01	.04	.19

	Random Effects		
Level	Covariance Estimate Unconditional Model	*SE*	Percentage of Total Variance at each Level
Level 3 (School)	.106	.044	10.6
Level 2 (Classroom)	.145	.046	14.5
Level 1 (Individual)	.744	.047	74.4

Note. SES = socioeconomical status.

* $p < .05$.

** $p < .01$.

*** $p < .001$.

Table 5

Mean First-Grade Aggressive-Disruptive Behavior Among Children with Different Risk Profiles

Risk Profile	Grade 1 Aggression
No risk factors (N = 148)	$.79_{a}$
Inattention only (N = 48)	$1.05_{a,b}$
Home aggression only (N = 55)	$1.32_{a,b,c}$
Classroom only (N = 120)	$1.37_{b,c}$
Classroom and inattention (N = 53)	$1.41_{b,c}$
Classroom and home aggression (N = 68)	1.83_{c}
Home aggression and inattention (N = 35)	1.95_{c}
Classroom, home aggression, and inattention (N = 36)	1.84_{c}

Note. Children were considered to have home aggression or inattention if the Parent Report Form/Teacher Report Form T score was 63 or higher. Classrooms were split at the median to designate those of higher versus lower quality context. Mean values with different subscripts are significantly different at the $p < .05$ level, adjusted for alpha inflation using Tukey's post hoc analyses. A mean value with a subscript or arrangement of subscripts is not significantly different from mean values with the same subscripts.