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Mothers' and Fathers' Support for Child Autonomy and Early School Achievement

National Institute of Child Health and Human Development Early Child Care Research Network

Data were analyzed from 641 children and their families in the National Institute of Child Health and Human Development Study of Early Child Care and Youth Development to test the hypotheses that in the early school years, mothers' and fathers' sensitive support for autonomy in observed parent–child interactions would each make unique predictions to children's reading and math achievement at Grade 3 (controlling for demographic variables), children's reading and math abilities at 54 months, and children's level of effortful control at 54 months and that these associations would be mediated by the level of and changes over time in children's observed self-reliance in the classroom from Grades 1 through 3. The authors found that mothers' and fathers' support for autonomy were significantly and uniquely associated with children's Grade 3 reading and math achievement with the above controls, but only for boys. For boys, the effect of mothers' support for child autonomy was mediated by higher self-reliance at Grade 1 and of fathers' support for child autonomy by greater increases in self-reliance from Grades 1 through 3.

Keywords: mother–child relationships, father–child relationships, early academic achievement, child social adjustment, transition to school

Concerns have been raised in the popular and scientific literature about the poor reading and mathematics achievement of American children (Campbell, Hombo, & Mazzeo, 2000; McClelland, Morrison, & Holmes, 2000; National Institute of Child Health and Human Development Early Child Care Research Network [NICHD ECCRN], 2004b). Because there is recognition that major individual differences in math and reading skills emerge before children arrive at school (Shonkoff & Phillips, 2000), that by the end of Grade 3 the rank ordering of achievement test scores is fairly stable, and that children's performance at Grade 3 is a good indicator of future school performance (Entwisle, Alexander, & Olson, 1997; Pianta & Walsh, 1996), researchers have increased their focus on understanding differential achievement progress for children in the early school years.

Family factors and experiences have been found to be important predictors of children's achievement progress (Bradley & Corwyn, 2002). This association may occur through a number of pathways. In this study, we focus on one set of pathways not often considered in the literature. We test the hypothesis that during the late preschool and early school years, interactions with mothers and fathers that support the development of autonomy are important to academic achievement progress because they are predictive of children's ability to operate autonomously and self-reliantly in the classroom, and this self-reliance is associated with the degree to which children derive benefit from the classroom.

Self-Reliance and Achievement

There is growing support (e.g., Alexander, Entwisle, & Dauber, 1993; Blair, 2002; Ladd, Birch, & Buhs, 1999; Morrison, Backman, & Connor; 2005; Raver, 2002) that children's social adjustment in the classroom is an important predictor of their early achievement progress. In this study, we focus on classroom observations of children's self-reliance as an important indicator of their social adjustment. We define self-reliance as the degree to which the child displays personal initiative, behavioral self-regulation, autonomy, persistence, and engagement in the class-

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room. We observe self-reliance in the classroom because we wish to have an ecologically valid index of this construct. Specifically, we are interested in (a) whether the child takes responsibility in the classroom for his or her materials, actions, and activities and whether he or she persists in difficult situations and tolerates frustration; (b) how much direction the child needs from teachers and how well he or she can use knowledge of classroom routine and structure to plan ahead and do assigned work; (c) how well the child asserts him- or herself with peers in the classroom; and (d) how comfortable the child is in taking the lead in classroom activities or problem solving with peers. We consider these behaviors as indicative of autonomous and self-reliant behavior. We think that autonomous and self-reliant behavior is a critical aspect of social development at this time in the child's life and will be important for the child's ability to take advantage of the classroom, as evidenced in math and reading achievement progress.

A number of theories point to the individual's ability to operate in an autonomous and self-reliant manner as an important developmental task of early childhood. Concepts related to autonomy are prominent in organismic and dynamic theories of development; classical developmental theories have considered the development of autonomy and self-initiation as hallmarks of healthy development (see Ryan, Deci, Grolnick, & La Guardia, 2006, for a fuller discussion). From an organizational view, Sroufe (1995) contended that during early childhood, the child "self" or "personality" must develop so that the child learns to manage frustration, accept delays and disappointments, operate in the environment autonomously and effectively, and cooperate and coordinate in give and take with others and that competence on tasks in school and later life depends on the child developing these qualities.

These qualities are likely to be particularly important as the child faces the challenge of the formal classroom upon entering school. There are new rules, new authority figures, and new peers. In such a challenging situation, K. E. Grossmann, Grossmann, and Zimmerman (1999) have noted that the quality of the child's emotional organization is revealed in the ability of the child to autonomously find problem solutions and develop goals worth pursuing while keeping attention focused on that process instead of giving up because of rising emotional tension.

Related Constructs

The construct of self-reliance is related to other constructs in the literature. An important component of being able to function with autonomy and self-reliance in the classroom is a capacity for emotional and behavioral self-regulation. Thus, we think that self-regulation is important in the ability to act with self-reliance and that children who show better self-regulation during the preschool years are likely to function more autonomously and self-reliantly in the classroom. However, we do not see self-reliance and self-regulation as the same construct. Showing autonomy and self-reliance reflects a broader construct that brings together many aspects of the child's functioning that have been studied separately, such as behavioral and emotional self-regulation, the management of frustration, the ability to skillfully coordinate behavior with peers, and so on. We conceptualize self-reliance as a construct that taps an important aspect of social competence at this age. Thus, self-regulation is expected to be related to these qualities we explore, but self-reliance is not limited to the construct of self-regulation; rather, the development of autonomy and self-reliance is likely to be supported by early self-regulation in the child.

In addition, the construct of autonomous self-reliance is likely related to motivational constructs in the literature. Bridges (2003) asserted that autonomy, mastery motivation, and control are interrelated constructs. The term "autonomy" refers to self-rule and is applied to actions that are initiated and regulated by the self; it is thus highly related to the notion of intrinsic motivation (Ryan et al., 2006).

Family Experiences and Self-Reliance in the Child

The child's development of the ability to function autonomously and self-reliantly in the face of a challenge is tied theoretically (Bowlby, 1969; Sroufe, 1995; Ryan et al., 2006) and empirically to experiences the child has in the family during the preschool years (e.g., Alexander & Entwisle, 1988; Barth & Parke, 1996; Bradley, Burchinal, & Casey, 2001; Burchinal, Campbell, Bryant, Wasik, & Ramey, 1997; Cowan & Cowan, 2005; McClelland et al., 2000; Pianta & Harbers, 1996; Pianta, Smith, & Reeve, 1991). Bowlby (1973) considered both the child's past and current experiences with parents important for adjustment. The child's experience with the parent throughout early childhood has been shown to foster development of the ability to navigate the environment autonomously and competently (K. E. Grossmann et al., 1999), and research by Ladd and colleagues (Clark & Ladd, 2000) suggests the continued importance of maternal connectedness and support of the child's autonomy to the child's social adjustment in the classroom.

Support for the child's autonomy from a warm, available parent is seen as an important aspect of parental sensitivity to the child because it both solidifies the quality of the parent–child relationship and facilitates self-development (Bretherton, 1987; Ryan et al., 2006). During the preschool years, a relationship with a parent who can support the child's autonomous and self-reliant efforts while remaining warm and available for assistance is expected to support a child's sense of instrumentality and competence; this process enhances the child's ability to assume self-regulatory responsibility and function self-reliantly in the world of peers and teachers away from the family (Sroufe, 1995). The transition to formal schooling is a time when children's abilities to function autonomously and self-reliantly are particularly tested. Thus, we expect that the support of parents during this time will be important to the child's social adaptation to school, which, in turn, is hypothesized to be critical to the child's ability to benefit from the schooling environment, as reflected in gains in reading and math achievement.

Father–Child Interaction and Child Self-Reliance

There is a long history of interest in the distinct and complementary roles in parenting that fathers play with mothers in families (e.g., Barth & Parke, 1993; Clarke-Stewart, 1980; Cox, Paley, Burchinal, & Payne, 1999; Cowan & Cowan, 2005; K. Grossman, Kindler, & Strasser, 2003; Lamb, 1978; Paquette, 2004; Parke, 1996; Weinraub, 1978; Youngblade & Belsky, 1992). K. Grossman et al. (2003) have noted that Bowlby posited a learner-teacher and play-partner system in addition to the attachment-caregiver

system. In Bowlby's view, fathering involved a greater emphasis on play, mentorship, and encouragement of the child in the face of challenges than did mothering. As would be expected if fathers play a distinct role, Gottman (1998) and Parke (2002) reported that children's experiences with their fathers account for more unique variation in some child outcomes than do experiences with mothers. K. Grossman et al. (2002) made the point that given this role of father as mentor, play partner, and one who encourages the child to meet challenges, fathers' relationships with children may be particularly important in supporting the child's self-reliance in the world outside the family. Thus, in the current study, we test the association of both mother–child and father–child support for autonomy in the preschool and early school years with gains in math and reading achievement from preschool to Grade 3, examining the independent contributions of both relationships. We then consider whether the association is mediated by the child's classroom self-reliance from Grades 1 through 3.

The Current Study

In this study, we analyzed data from the NICHD Study of Early Child Care and Youth Development (SECCYD). The large scale of this study makes it possible to build on earlier studies that lacked the large sample, independent measurement, and longitudinal data available in this study. We address the following hypotheses: (a) Mothers' and father's sensitive support for autonomy (in observed parent–child interactions from 54 months to Grade 3) will each make unique predictions to children's reading and math achievement at Grade 3 (controlling for demographic variables and children's reading, math achievement, and self-regulation at 54 months); and (b) the association will be mediated by the child's observed self-reliance and growth in self-reliance in Grade 1 and Grade 3 classrooms. We consider whether these paths are similar for boys and girls; however, given that there are few findings to follow, we do not suggest a strong hypothesis here.

Method

Sample

The sample in the present study represents a subset of the larger, longitudinal sample in the NICHD SECCYD (N = 1,364 at 1-month recruitment). Only those families in which both fathers and mothers were residents in the home from the time the child was 54 months old through the child's Grade 3 year were included. Families in the NICHD SECCYD were originally recruited in hospitals in 1991 from 10 geographic areas (Little Rock, AR; Irvine, CA; Lawrence, KS; Boston, MA; Philadelphia and Pittsburgh, PA; Charlottesville, VA; Morganton and Hickory, NC; Seattle, WA; Madison, WI). The data collected in the study included multiple indicators of family, child care, and school context, along with multiple measures of child characteristics and child psychological and behavioral outcomes, collected from birth through middle childhood (see http://secc.rti.org for more details regarding the recruitment, the sample, and the study).

Data from children and parents were included in the current analysis subset if married mothers and fathers were present at every wave of the study from the initial survey at 1 month of age through Grade 3. The sample was restricted to children who had the consistent presence of a married father because the subset of cohabitating, unmarried fathers was small (n = 33) and there is evidence that suggests that there are significant differences on social adjustment outcomes between children of married and cohabitating parents (NICHD ECCRN, 2004a). This inclusion criterion resulted in a sample size of 641 for the longitudinal subset. Of the children in the subsample, 49% were female and 95% were White, non-Hispanic. Compared with the overall NICHD SECCYD sample, this longitudinal subset of stable two-parent families is more likely to be European American, more highly educated, and middle class. Almost 18% of mothers had completed high school or less, 29.9% had completed some college, 30.5% held bachelor's degrees, and 21.0% held graduate or professional degrees. The distribution of educational attainment was similar for fathers. Also, 83.4% of participating families in the analysis subset had an income-to-needs ratio above 2 (total family income divided by the federal government's published poverty levels for their family size).

Measures

The key measures in this article are mothers' and fathers' observed sensitive support for autonomy in interaction with their children rated from dyadic interactions at 54 months and Grades 1 and 3, classroom qualitative observations of children's self-reliance from Grades 1 and 3, children's reading and math achievement using the Woodcock–Johnson Letter Word and Applied Problems subscales at 54 months and Grade 3, and mothers' ratings of children's effortful control at 54 months using the Children's Behavior Questionnaire. Mother–child and father–child interactions were collected at different visits within the same time point.

Mother and father sensitive support for autonomy. The mother–child and father–child videotaped observations of interaction involved two or three activities at each age of assessment. The activities were completed in a set sequence. At the 54-month home visit, dyadic father–child interactions involved two activities: constructing a stacked series of chutes and ramps together using Marbleworks (Discovery Toys, Livermore, California) and playing with a set of jungle animal families and props. The Grade 1 father–child activities included drawing a sailboat together using an Etch-A-Sketch (Ohio Art, Bryan, Ohio) with the father controlling one knob and the child controlling the other, a geometric block activity requiring the child to match block patterns with the father's help as needed, and playing a Slap-Jack card game. At Grade 3, the first activity was a discussion task in which father and child were to discuss their views of different rules chosen randomly regarding what kids and parents should do (e.g., "Kids should be able to wear whatever they want" and "Parents should set limits on what television their kids can watch"), and the second activity involved sorting and sequencing three sets of cards with each illustrating a story (e.g., a haircut, a birthday party).

Similar activities were videotaped with mothers and children at 54 months and in Grades 1 and 3 during laboratory visits. At 54 months, the activities for mothers and children included completing a maze using an Etch-A-Sketch, building a series of identical towers from blocks of varying shapes and sizes, and playing together with six hand puppets. During the Grade 1 assessment, the interaction tasks included working together to draw a picture of a

house and a tree using an Etch-A-Sketch (with the mother controlling one knob and the child the other), a patterned block activity that involved using colored blocks of different parquet shapes to fill in geometric frames, and a card game. At Grade 3, mothers and children engaged in the same discussion task used with fathers but with a different set of rules followed by an errand-planning task in which the child determined with mother the best route around a town map to accomplish 11 errands (e.g., return book to library).

Coding of all videotapes from the 10 sites occurred at a central location. Trained observers who were naive to other information about the families coded the videotapes using 7-point rating scales. Different teams of six to seven coders each were used for coding the videotapes at each age, with minimal overlap (one or two coding team members served as coders for the 54-month and Grade 1 time periods or the Grade 1 and Grade 3 time periods); all teams were trained and supervised by Margaret Tresch Owen at the University of Texas at Dallas site. All coders met on a regular basis to rate tapes of both types of dyads together to ensure consistency of rating among all coders.

As noted in the introduction, the abilities of children to operate autonomously and effectively and emotionally engage in a positive way with others constitute important developmental tasks of the late preschool and early school years. Sensitivity of parents to the child's developmental needs during this time involves whether parents can respect and support the child's autonomous actions, provide a supportive presence, and do so in a positive, nonhostile manner, especially when the child is faced with a challenge. Thus, parent–child interactions as described above were coded for the parent's respect for autonomy, supportive presence, and hostility using 7-point global rating scales that were refined at each time period for age and task appropriateness (see Owen, Klausli, & Murrey, 2000; Owen, Vaughn, Barfoot, & Ware, 1996).

Respect for autonomy reflects the degree to which the parent acts in a way that recognizes and respects the child's individuality, motives, and perspectives. A parent scoring high on this scale acknowledges the child's perspectives and opinions as a valid part of the child's individual identity. For example, a parent may do this explicitly by negotiating rules with the child; acknowledging the child's actions, intentions, and ideas; not denying the child's right to those desires; and modeling his or her own (the parent's) individuality. A parent scoring low on this scale would be very intrusive in his or her interventions with the child, exerting his or her expectations on the child in a way that makes the child a servant of the parent rather than a partner in a mutually negotiated relationship. The low-scoring parent might engage in win–lose power struggles in which compliance or submissiveness by the child makes the parent the winner. The parent may intrude either harshly or with affection; in either case, through controlling behavior, the parent's actions do not acknowledge the child's intentions and they deny the child's autonomy.

A parent scoring high on supportive presence expresses positive regard and emotional support to the child. For example, this may occur by acknowledging the child's accomplishments on the task he or she is doing (e.g., fitting together complex shapes to build a tower) and by encouraging the child with positive emotional regard (e.g., "You're really good at this" or "You got another one right"). If the child is having difficulties with the task, then the parent responds to the child's needs for help and support, is reassuring and calm, and provides an affectively positive secure base for the child. Such parents are positively engaged in the interaction; they give criticism constructively and show pleasure in working with their child. A parent scoring low on this scale fails to provide supportive cues; he or she might be passive, uninvolved, aloof, or otherwise unavailable.

The hostility scale (reversed in the composite described below) reflects the parent's expression of anger with the child and/or discounting or rejection of the child. A parent scoring high on this scale would clearly and overtly reject the child, blame him or her for mistakes, and otherwise make explicit the message that he or she does not support the child emotionally. A parent scoring low on this scale may or may not be supportive of the child, but he or she does not blame or reject the child or communicate hostility.

Composite scores of parental sensitive support for autonomy were created using the sum of the three ratings of respect for autonomy, supportive presence, and hostility (reversed) in each of these interactions. Cronbach's α for sensitive support for autonomy composites ranged from .82 to .84 across mothers and fathers and time periods. Interobserver reliability was calculated from a second rating of 18–23% of the mother–child and father–child videotapes at the different ages by independent raters without the knowledge of which tapes had been assigned to a second rater. The interrater reliability coefficients for the composites based on repeated-measures analyses of variance (ANOVA) described in Winer (1971) ranged from .84 to .91 for maternal sensitivity and from .71 to .87 for paternal sensitivity.

Both mothers and fathers showed moderate stability in this composite measure of parental sensitive support for autonomy from 54 months to Grade 3, with correlations ranging from .39 to .49 for mothers and from .29 to .45 for fathers. It is important to note that this composite variable of sensitive support for autonomy is also simply called "sensitivity" as a short hand in this and other publications that use this variable.

Mediator

Classroom self-reliance. Classroom observations took place using the Classroom Observation System for First Grade and Third Grade (NICHD ECCRN, 2002). The Classroom Observation System is an upward extension of the Observational Record of the Caregiving Environment used in the NICHD SECCYD at 54 months and in a subsample of the larger study at kindergarten (Pianta, La Paro, Payne, Cox, & Bradley, 2002). The focus of the observation is the classroom as well as the study child and his or her experiences and behavior in the classroom. All observations occurred during the morning and began with the official start of the school day. The entire observation took a minimum of 3 hr. Ten-minute periods of observation for global ratings were interspersed with time-sampling periods. For the global ratings, children were observed over three cycles. The scores obtained for each global rating during each of the three cycles were averaged to obtain the score for the total session.

Self-reliance in the classroom was coded globally on a 7-point scale from low self-reliance to high self-reliance and reflected the degree to which the child displayed personal initiative, self-regulation, autonomy, and persistence and engagement in the classroom. The child high on this scale takes responsibility for his or her materials, actions, and activities and persists in difficult

situations. Such a child needs little direction from teachers and uses his or her knowledge of classroom routine and structure to plan ahead and do his or her class work. The child may show initiative, leadership, and a willingness to take risks. The child high in self-reliance is self-directed in nearly all situations and uses adult guidance only after using his or her own resources. The self-reliant child is able to assert him- or herself with peers and is comfortable taking the lead in activities, problem solving with peers, or discussion of ideas or plans for activities. A child rated high on self-reliance consistently demonstrates the markers of self-reliance throughout the observation.

The child with low self-reliance appears to lack confidence. When faced with challenges, however minor, he or she might first seek adult assistance before attempting the task. This child may be passive, not initiating activities until told what to do. He or she may be hesitant in asserting him- or herself with peers and may retreat if rebuffed by peers. This child may appear unmotivated. The child low on self-reliance does not assert his or her self and appears dependent on teacher or peers. He or she asks for help, even when help is not needed, and bids for independence may be inappropriate (i.e., by breaking rules or being passively noncompliant) and oriented toward gaining the teacher's attention. The child low on self-reliance may function well only when adult help is available.

Observers from all 10 sites first trained on practice videotapes that followed activities of a targeted child in a classroom using a manual that provided extensive description of codes and anchor points. All observers then participated in a centralized training workshop. Each of the 10 sites generally had two to three observers. After the workshop, observers returned to their sites, conducted pilot observations, and trained on more videotaped cases. All observers had to pass a videotaped reliability test that involved six cycles (each cycle with different children) of time-sampling coding and qualitative ratings. On the global qualitative codes, criteria for passing were at least an 80% match within one scale point. All observers passed at these levels on a reliability test before being certified to conduct observations in the field. Observers conducted a minimum of two paired visits, scheduled randomly during the data collection, for the purpose of estimating the interrater reliability of live coding. On the global self-reliance scale, live reliability between coders was estimated using repeated measures (ANOVA) as described by Winer (1971). The reliability coefficient across all pairs of coders was .76 at Grade 1 and .86 at Grade 3.

Reading and mathematics achievement at Grade 3. Reading and mathematics achievement were assessed through two subtests of the Woodcock–Johnson Tests of Psychoeducational Achievement—Revised (Woodcock & Johnson, 1989/1990): the Letter–Word Identification (LW) and the Applied Problems (AP) subtests. The LW subtest was used to index the child's reading achievement. The first five items involve symbolic learning, or the ability to match a pictographic representation of a word with an actual picture of the object. The remaining items require identifying isolated letters and words that appear in large type. The AP subtest measures the child's skill in analyzing and solving practical problems in mathematics. To solve the problems, the child must recognize the procedure to be followed and then perform relatively simple calculations.

Auxiliary Variables

Child gender. Child gender was used as a grouping variable for multiple-group structural equation modeling (SEM) analysis.

Mothers' education. Mothers' education was measured as an ordinal variable capturing the type of education mothers had received (up to the time that children were 1 month of age), ranging from less than high school graduate, high school diploma/GED, some college, bachelor's degree, some postgraduate work, master's degree, to juris doctor and doctoral degree. Mothers' education was included as a demographic covariate to control for potential confounds of parenting, social adjustment, and achievement with socioeconomic status. Mothers' education was highly correlated with fathers' education ($r > .75$) and was deemed a sufficient measure of the educational attainment of both parents.

Race–ethnicity. It was anticipated that race–ethnicity would not account for any variability in parenting, social adjustment, or achievement because of the lack of variability in race–ethnicity among the two-parent families in the sample (i.e., 95% White, non-Hispanic subsample). Nevertheless, race–ethnicity was examined as a covariate and found not to be significantly related to parenting, social adjustment, or achievement and was not included in subsequent analyses.

Achievement at 54 months. The 54-month assessments of LW and AP (described above) were used as covariates to control for previous levels of achievement and their relationship with Grade 3 achievement. Earlier attempts were made to model reading and math achievement trajectories (using 54 month, Grade 1, and Grade 3 measures). However, rank-order stability in achievement in LW and AP from Grade 1 and beyond (i.e., extremely high correlations) compromised our ability to examine variability in change over time, as high correlations (rs $> .75$) indicated that children's achievement scores increased at the same rate over time. This stability in achievement is consistent with findings from other studies of longitudinal achievement (Entwisle et al., 1997; La Paro & Pianta, 2001), although findings from earlier studies suggest that this stability would be seen starting around Grade 3 whereas we see it here beginning at Grade 1. Thus, we focused on Grade 3 achievement as a distal outcome and used achievement at a time point prior to Grade 1 (54 months) for statistical control. By controlling for the child's 54-month reading and math achievement in the model, we were predicting the gains that the children made in reading and math from 54 months to Grade 3.

Self-regulation at 54 months. Qualities of the child's self-regulation are likely to be important in their ability to function self-reliantly. Calkins and Dedmon (2000) have noted that emotion regulation skills seem to be fundamental to many of the social, cognitive, and academic skills that are implicated in early school success. Moreover, during the preschool years, children's self-regulation likely affects their interactions with parents as well as their ability to function autonomously and self-reliantly in settings outside the family and thus could explain the association between parenting and classroom self-reliance. To control for this, we include effortful control in our model as our index of self-regulation at 54 months. Effortful control, which refers to the ability to inhibit a dominant response to perform a subdominant response in response to situational demands, is believed to play an important role in the regulation of emotion (Rothbart & Bates, 2006) and has been shown to be an important milestone in chil-

dren's early development with significant implications for later adaptive functioning (K. T. Murray & Kochanska, 2002).

Mothers completed the Children's Behavior Questionnaire (Rothbart, Ahadi, & Hershey, 1994) when the children were 54 months old. This widely used measure of parental report of child temperament is appropriate for children ages 3–8. Three broad dimensions of temperament (Surgency, Negative Affectivity, and Effortful Control) were assessed by items that describe children's reactions to different situations. Mothers completed 80 items from eight subscales of the original measure. Two subscales were used as indicators of a latent variable representing children's effortful control at 54 months: Inhibitory Control (10 items; Cronbach's $\alpha = .75$) and Attentional Focusing (9 items; Cronbach's $\alpha = .75$). Table 1 provides descriptive statistics for all measures used in the analyses.

Results

Statistical Approach

An SEM framework was used to test the study hypotheses. The particular approach we used for modeling longitudinal mediation effects was derived from the work of Cheong, MacKinnon, and Khoo (2001, 2003) and takes advantage of one key feature of longitudinal modeling in the SEM framework: allowing for the modeling of paths between multiple sets of repeated measures (i.e., parallel or sequential processes between variables), which is a limitation in current hierarchical linear modeling software. The key features of this model are (a) modeling static (i.e., single point in time) and dynamic (changes over time) levels among mediators (i.e., classroom self-reliance) as a function of static and dynamic levels in parental sensitivity and (b) modeling the relation between static and dynamic measures of the mediator and measures of achievement in Grade 3. This approach to longitudinal modeling takes advantage of recent developments in confidence interval (CI) estimation for mediation effects (MacKinnon, Lockwood, Hoffman, West, & Sheets, 2002; MacKinnon, Lockwood, & Williams, 2004). For further technical and pedagogical detail on longitudinal mediation models, readers should consult Cheong et al. (2001, 2003). Full information maximum likelihood was used under the assumption that the probability of missingness may depend on data that are observed (i.e., nonmissing) but not on the values of the data that are missing (i.e., missing at random; Schafer & Graham, 2002).

Table 1
Descriptive Statistics

Measure	Boys	Girls
Predictor		
Mother sensitivity		
54 months	17.48 (2.44)	17.60 (2.43)
Grade 1	17.63 (2.43)	17.44 (2.64)
Grade 3	16.60 (2.23)	16.98 (2.11)
Father sensitivity		
54 months	17.65 (2.32)	17.77 (2.27)
Grade 1	17.04 (2.71)	17.42 (2.34)
Grade 3	16.94 (2.42)	17.64 (2.05)
Mediator: Self-reliance		
Grade 1	4.69 (1.04)	4.87 (1.01)
Grade 3	4.38 (0.96)	4.64 (0.82)
Outcome		
W-J LW Grade 3	496.03 (17.09)	496.71 (16.28)
W-J AP Grade 3	500.39 (11.64)	498.75 (10.80)
Covariate		
W-J LW 54 months	370.27 (20.00)	374.75 (20.76)
W-J AP 54 months	426.48 (18.84)	430.22 (14.54)
Inhibitory control	4.63 (0.74)	4.82 (0.75)
Attentional focusing	4.71 (0.86)	4.87 (0.80)
Mothers' education		
Some college (%)	79.62	84.47

Note. Unless otherwise indicated, values are means (and standard deviations). Descriptive statistics are based on adjustments for missing data under the missing-at-random assumption with the expectation maximization algorithm. W-J = Woodcock–Johnson Tests of Psychoeducational Achievement—Revised; LW = Letter–Word Identification subtest; AP = Applied Problems subtest.

Site-Level Variability

Families in the NICHD SECCYD were originally recruited from 10 distinct geographic areas. Other NICHD SECCYD articles have observed significant site-level clustering on several types of measures. The models described in this article (multiple-group multiple-process longitudinal growth models) require proper modeling of nonindependence of observations. In this study, there are three types of nonindependence: (a) repeated measurements from the same children over time (i.e., intraindividual clustering), (b) families from the same geographic locations responding in a more similar manner than families across geographic locations (i.e., site-level clustering), and (c) repeated-measures observations of mother's and father's parenting behavior as predictors. Although the correlations between mother's and father's parenting behaviors are modeled naturally with covariances among correlated growth processes (see Khoo & Muthén, 2000, for an example of modeling nested family with older and younger siblings), failure to account for the two other types of clustering can result in a nontrivial reduction of standard errors, increasing the likelihood that effects are detected in the sample when the corresponding effect is zero in the population (i.e., increased Type I errors; D. M. Murray & Blitstein, 2003). Adjustments for site-level clustering were made using the cluster-correlated (multiple-group) longitudinal growth modeling framework of Mplus Version 4 (L. K. Muthén & Muthén, 1998/2006). It is noted that site-level intraclass correlations for self-reliance were highly significant at Grade 1 (.052, $p = .0003$) and at Grade 3 (.125, $p < .0001$).

Overall Model Fit

Examination of global fit statistics suggested that the overall structure of the multiple-group longitudinal growth model fit the data well, $\chi^2(108) = 173.942$, $p < .0001$, comparative fit index (CFI) = .959, root-mean-square error of approximation (RMSEA) = .044, 90% CI = .031–.055. Table 2 provides details on the coding of time for each set of repeated measures.

We reiterate that the effects of interest were adjusted for site-level nesting and the covariates representing mother's education, 54-month achievement, and 54-month effortful control. Grade 3 achievement measures and self-reliance growth parameters were regressed onto mother's education, 54-month achievement, and 54-month effortful control measures; these same covariates were

Table 2
Structuring of Intraindividual Model Time Coefficients for Multiple Sets of Repeated Measures

Measure	Time coefficient		
	Intercept (α)	Slope (β)	Level-1 residual (e)
Predictor			
Mother sensitivity			
54 months	1	0	Freely estimated
Grade 1	1	1.5	Freely estimated
Grade 3	1	3.5	Freely estimated
Father sensitivity			
54 months	1	0	Freely estimated
Grade 1	1	1.5	Freely estimated
Grade 3	1	3.5	Freely estimated
Mediator: Self-reliance[a]			
Grade 1	1	0	Fixed to 0 variance
Grade 3	1	2	Fixed to 0 variance

Note. The time point at which the time coefficient for the slope = 0 is where the intercept (α; static measure) is defined for each set of repeated measures. Time coefficients are structured such that interpretation of the slope for each measure is the estimated amount of change on a given measure across 1 year.
[a]Because self-reliance is measured only at two waves, the additional constraint of zero residual variance to this set of repeated measures is required for identification of this portion of the model. In the case of having only two waves of data, there would be no discrepancy between the individual's actual score and his or her estimated score based on his–her (linear) trajectory, hence no residual term. This structure is analogous to using the observed difference score divided by 2 (i.e., [Grade 3_{SR} – Grade 1_{SR}] / 2). However, we acknowledge that it is not possible to test the linearity of self-reliance trajectories with only two waves of data.

allowed to each correlate freely with parenting growth parameters and also to freely correlate with each other. Although results on the impact of covariates are not presented, results that are presented are based on statistical adjustment for covariates and site-level nesting. Significant structural coefficients (i.e., paths) from the overall model are shown in Figure 1.

Boys

Impact of parenting on self-reliance. For boys, the mother sensitivity intercept was positively related to the self-reliance intercept ($r^2 = .008$, $p = .024$). Higher levels of mother sensitivity at 54 months were predictive of higher classroom self-reliance in Grade 1. The father sensitivity intercept was positively related to the self-reliance slope for boys ($r^2 = .006$, $p = .041$). Higher levels of father sensitivity at 54 months were associated with greater increases in self-reliance among boys from Grade 1 to Grade 3.

Impact of self-reliance on Grade 3 achievement. The boys' self-reliance intercept was positively related to both LW performance ($r^2 = .049$, $p < .001$) and AP performance ($r^2 = .053$, $p < .001$) in Grade 3. Higher levels of self-reliance in Grade 1 predicted higher reading and math achievement scores in Grade 3.

The self-reliance slope for boys also was positively related to LW performance ($r^2 = .035$, $p < .001$) and AP performance ($r^2 = .024$, $p < .001$) in Grade 3. Greater increases in self-reliance from Grade 1 to Grade 3 predicted higher reading and math achievement scores in Grade 3.

Girls

Impact of parenting on self-reliance. For girls, all linkages between parenting and self-reliance (after controlling for mothers' education, earlier achievement levels, and earlier levels of effortful control) were nonsignificant.

Impact of self-reliance on Grade 3 achievement. The girls' self-reliance intercept was positively related to LW performance ($r^2 = .008$, $p = .025$) and AP performance ($r^2 = .019$, $p < .001$) in Grade 3. Higher levels of self-reliance in Grade 1 predicted higher reading and math achievement scores in Grade 3. The self-reliance slope was positively related to AP performance in Grade 3 ($r^2 = .015$, $p < .001$). Greater increases in self-reliance from Grade 1 to Grade 3 predicted higher math achievement scores in Grade 3.

Within-Gender Mediation Effects

Paths that met the criteria for further tests of mediation were formally examined using the aforementioned asymmetric confidence interval (ACI) test. Within-gender mediated effect tests were conducted solely for boys (as paths for girls did not meet criteria), as shown in Table 3.

For boys, higher rates of change in self-reliance over time (from Grade 1 to Grade 3) mediated the impact of father sensitivity at 54 months on Grade 3 reading and math achievement. Also, self-reliance in Grade 1 mediated the impact of mother sensitivity at 54 months on Grade 3 reading and math achievement for boys.

Comparing Mediated Effects Across Child Gender

In lieu of interaction tests across gender for specific paths (e.g., Gender × Parenting interaction effects on self-reliance), additional tests were conducted to assess whether there were significant differences between boys and girls across the entire mediation chain from results shown in Table 3. These analyses essentially asked the following question: If a mediated effect is significant in (at least) one of the gender groups, then is that effect significantly different from the corresponding effect in the other gender group? Recent applications of differential mediation effects (e.g., Morgan-Lopez, Castro, Chassin, & MacKinnon, 2003; Tein, Sandler, MacKinnon, & Wolchik, 2004) have focused on differences in mediation across a moderator variable that moderates only one of the links of the mediational chain at a time (i.e., gender).

For differential mediation analyses in this article, we used a method for assessing the differences between two mediated effects through two different mediators in the same population (i.e., mediation contrasts; MacKinnon, 2000) for the comparison of two mediated effects in independent populations (i.e., boys vs. girls). This allowed us to assess differences in mediation across gender without the need to examine differences in each link of the mediation chain separately. As formal statistical evaluation of the ACI method for use with mediation effect contrasts has not been conducted, we used the estimator derived by MacKinnon (2000) based on the multivariate delta method (Bishop, Fienberg, & Holland, 1975). To meet criteria for differential mediation tests, the tested mediation effect had to be significant in at least one of the gender groups.

The mediated effects of 54-month father sensitivity on achievement (Grade 3 LW and AP) as transmitted through changes in

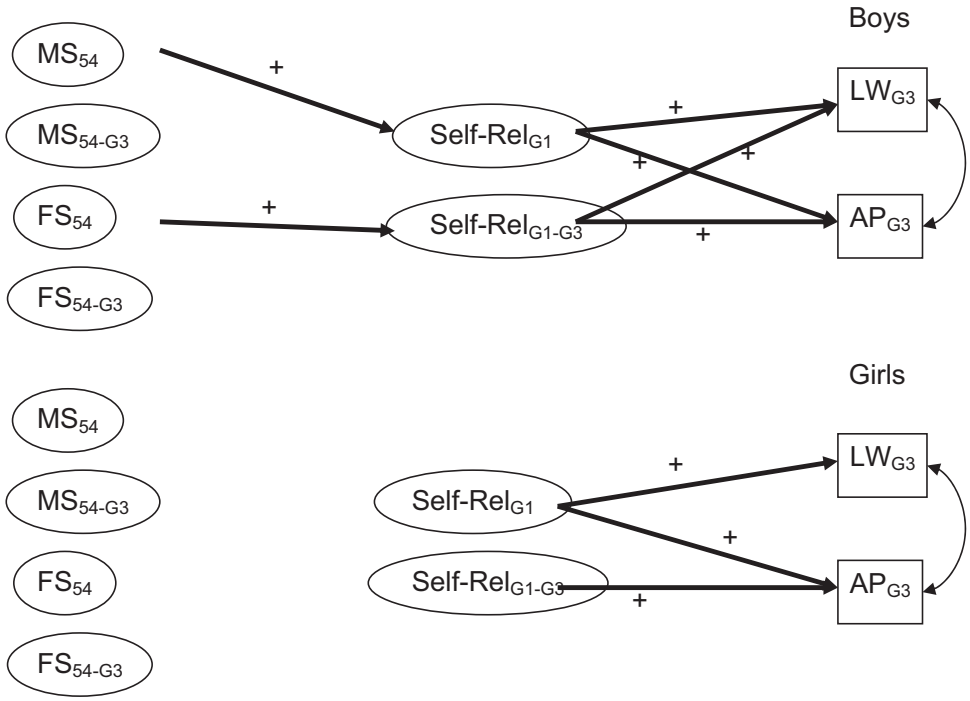

Figure 1. Depiction of significant structural paths. Alpha (α) is the intercept, and beta (β) is the slope (over time). MS = mother sensitivity; 54 = 54 months; Self-Rel = self-reliance; G1 = Grade 1; LW = Letter–Word Identification subtest from the Woodcock–Johnson Tests of Psychoeducational Achievement—Revised; G3 = Grade 3; FS = father sensitivity; AP = Applied Problems subtest from the Woodcock–Johnson Tests of Psychoeducational Achievement—Revised.

self-reliance were significant for boys but not for girls in separate-groups analysis, as shown in Table 3 and Figure 1. Differential mediation analyses across gender showed that the father sensitivity → (changes in) self-reliance → Grade 3 achievement mediated effects for boys were significantly stronger than the corresponding effects for girls (see Table 4).

We fit an alternate model to these data, with equality constraints across gender on the paths from mother sensitivity to Grade 1 self-reliance and the two paths from Grade 1 self-reliance to achievement (Grade 3 LW and AP). This was done to obtain estimates for the mother sensitivity → self-reliance → achievement effects pooled across gender, given differential mediation effect analysis showed that these mediated effects were not different across gender (though they were significant for boys and not girls within gender). The model fit the data well, $\chi^2(111) = 184.379$, $p < .0001$, CFI = .954, RMSEA = .045, 90% CI = .034–.057. In this model, higher levels of mother sensitivity at 54 months (as pooled across boys and girls) predicted higher levels of self-reliance in Grade 1 ($b = .175$ [.065]) = 2.70, $p < .01$. In turn, higher Grade 1 self-reliance led to higher levels of LW ($b =$

Table 3
Key Path Coefficients

Mediated effect	Sensitivity to SR	SR to achievement
Boys		
$\alpha_{FS} \rightarrow \beta_{SR} \rightarrow LW_{Grade\ 3}$	.104 (.051)*	9.446 (2.010)**
$\alpha_{FS} \rightarrow \beta_{SR} \rightarrow AP_{Grade\ 3}$	.104 (.051)*	4.853 (1.261)**
$\alpha_{MS} \rightarrow \alpha_{SR} \rightarrow LW_{Grade\ 3}$	.429 (.191)*	6.750 (1.201)**
$\alpha_{MS} \rightarrow \alpha_{SR} \rightarrow AP_{Grade\ 3}$	.429 (.191)*	4.409 (0.756)**
Girls		
$\alpha_{FS} \rightarrow \beta_{SR} \rightarrow LW_{Grade\ 3}$	.008 (.035)	2.434 (2.106)
$\alpha_{FS} \rightarrow \beta_{SR} \rightarrow AP_{Grade\ 3}$	.008 (.035)	4.409 (1.422)**
$\alpha_{MS} \rightarrow \alpha_{SR} \rightarrow LW_{Grade\ 3}$	.106 (.060)	2.627 (1.178)*
$\alpha_{MS} \rightarrow \alpha_{SR} \rightarrow AP_{Grade\ 3}$	.106 (.060)	2.788 (.799)**

Note. All mediation effects are significantly different from zero. Alpha (α) is the intercept, or the static measure; beta (β) is the slope, or the dynamic measure. SR = self-reliance; FS = father sensitivity; LW = Letter–Word Identification subtest; AP = Applied Problems subtest; MS = mother sensitivity.
$^*p < .05$. $^{**}p < .001$.

Table 4
Tests of Differences in Mediation Across Child Gender

Mediated effect	Estimate	σ
$\alpha_{FS} \rightarrow \beta_{SR} \rightarrow LW_{Grade\ 3}$	0.913**	.234
$\alpha_{FS} \rightarrow \beta_{SR} \rightarrow AP_{Grade\ 3}$	0.475**	.090
$\alpha_{MS} \rightarrow \alpha_{SR} \rightarrow LW_{Grade\ 3}$	1.718	.998
$\alpha_{MS} \rightarrow \alpha_{SR} \rightarrow AP_{Grade\ 3}$	1.165*	.490

Note. The estimate is the difference between the mediated effect for girls and the corresponding effect for boys; σ is the standard error (based on estimator described in MacKinnon, 2000). FS = father sensitivity; SR = self-reliance; LW = Letter–Word Identification subtest; AP = Applied Problems subtest; MS = mother sensitivity.
$^*p < .05$. $^{**}p < .001$.

4.649[.841]) = 5.511, $p < .001$, and AP (b = 3.720[.548]) = 6.794, $p < .001$, in Grade 3. Formalized mediation analyses suggested that the pooled indirect effects of mother sensitivity on achievement were significant for both LW (mediated effect = .813, 90% CI = .213–1.53) and AP (mediated effect = .651, 90% CI = .174–1.19). Although the differences in mediation effects across gender were nonsignificant, these supplementary results should be interpreted with caution because the difference in model fit between the focal model and this supplementary model was significant, $\Delta\chi^2(3) = 10.437$, $p = .015$, suggesting that the individual paths differ across gender even if the mediated effects do not.

Discussion

As hypothesized, we found unique associations of both mothers' and fathers' sensitive support for child autonomy with children's Grade 3 reading and math achievement, but only for boys. Both mothers and fathers who were higher on sensitive support for autonomy at 54 months had sons who made greater gains in reading and math achievement from 54 months to Grade 3. In the case of the mothers, the association was mediated by a higher mean level of self-reliance shown by the boys in the classroom associated with mothers' more sensitive support of their boys' autonomy. For fathers, the association between higher sensitive support for autonomy and gains in reading and math achievement from 54 months to Grade 3 was mediated by the boys' growth in autonomous self-reliance from Grades 1 to 3 associated with fathers' more sensitive support for autonomy.

The finding that fathers' support for autonomy was associated with boys' achievement gains through the mediation of gains in self-reliance boys made between Grades 1 and 3 is consistent with the contention that fathers' relationships with children may be particularly important in supporting children's self-reliance as they transition to the world outside the family. The finding also is consistent with findings reported by Marsiglio, Amato, Day, and Lamb (2000) and Grossmann and colleagues (K. Grossmann et al., 2002), who asserted that fathers serve an important function when they are sensitive, supportive, and challenging companions for the child in exploration beyond the family. In their view, fathers, more than mothers, encourage the development of competence that children will need in functioning outside the family, whereas mothers function as a haven of safety and security and serve to tie the child to the family. Nonetheless, independent contributions of mothers' sensitive support also were evident for boys' level of self-reliance in the classroom and their school achievement in Grade 3 but were not associated with the gains in self-reliance boys made from Grades 1 to 3. The findings also are consistent with the suggestion that fathers show more involvement with sons than with daughters (Amato, 1987; Cox et al., 1999; Harris & Morgan, 1991; NICHD ECCRN, 2000), and, as a result, fathers may have a greater impact on male children than on female children. Amato and Rezac (1994) found that boys, but not girls, from single-parent homes who continued to have contact with their fathers showed better social adjustment than those who had no contact.

That the findings were apparent for boys and not for girls is of interest, considering that (a) boys are more at risk than girls for social adjustment difficulties involving hostile and aggressive physical behavior toward others, impulsivity and hyperactivity, and noncompliance with adults and peers at these early school ages (Deater-Deckard, Dodge, Bates, & Pettit, 1998; Zahn-Waxler, 1993; Zoccolillo, 1993) and (b) boys may be particularly at risk academically in the early years of school because they more often fail a grade or enter special education than do girls (Alexander, Entwisle, & Dauber, 1994; Bianchi, 1984; Entwisle & Alexander, 1988). Given the greater risks for boys, relationships with parents may be particularly critical at this time in their lives.

These effects for boys were over and above their level of self-regulation at 54 months, as indexed by mothers' reports of their effortful control, also a significant predictor of both self-reliance and achievement gains in school. It is not surprising that the child's developing self-regulation during the preschool years is important to his or her ability to function self-reliantly in the classroom. The child's ability to self-regulate before school entry could affect the interactions between the child and parent as the child transitions to school as well as support the child's ability to self-reliantly function in the classroom.

Because self-regulation could be associated both with parenting and with self-reliance, it was important to ask whether the parent's sensitive support for autonomy predicted achievement gains mediated through self-reliance in the classroom independent of the child's self-regulation abilities before school entry. We expected that parenting would be important over and above the child's preschool self-regulation because we considered the transition to school as a new challenge for the child and a time when the child would have to make new adaptations involving more self-reliant and autonomous behavior than earlier contexts had required—thus a time when parental support would be particularly important.

That the significant role of parenting was supported when we controlled for the boys' earlier level of effortful control was consistent with reports of other researchers' findings with children at slightly older ages. Eisenberg et al. (2005) found that parental warmth and positive support predicted school-aged children's levels of effortful control, which, in turn, predicted children's adjustment 2 years later. Children's effortful control mediated the link between positive parenting and children's adjustment, and there was no evidence that children's effortful control predicted warm supportive parenting, although Eisenberg and colleagues had previously found that children's regulation predicted punitive behaviors in parents (Eisenberg et al., 1999). Likewise, with older children, Brody, McBride Murry, Kim, and Brown (2002) found that competence-promoting parenting predicted child cognitive competence, social competence, and psychological adjustment 1 year later via child self-regulation, controlling for earlier child competence and adjustment.

Although for boys the model was significant when controlling for earlier self-regulation, for girls the model was not. For girls, without the addition of the child's 54-month effortful control into the model, mothers' (but not fathers') support for autonomy predicted daughters' gains in math and reading achievement from 54 months to Grade 3, mediated by the mean level of self-reliance daughters showed in the classroom at Grades 1 and 3. With the addition of the 54-month effortful control indicator, the link between mother's sensitive support for autonomy and the child's achievement was no longer significant, although girls' higher self-reliance and gains in self-reliance from Grades 1 to 3 in the

classroom were still associated with higher Grade 3 achievement when controlling for 54-month achievement.

As noted earlier, many studies document that as a group, female children are less at risk in the early years of school than male children because they less often fail a grade or enter special education (Alexander et al., 1994; Bianchi, 1984; Entwisle & Alexander, 1988). In the early grades, teachers view girls more positively in the classroom than they view boys (NICHD ECCRN, 2004a). In elementary school, girls show fewer social adjustment difficulties than do boys (Deater-Deckard et al., 1998; Zahn-Waxler, 1993; Zoccolillo, 1993). These differences for boys and girls may reflect different sex-linked vulnerabilities and/or different average developmental timetables. Keenan and Shaw (1997) noted that the literature on sex differences in problem behavior showing diverging paths for boys and girls at about 4 years of age is consistent with a hypothesis that girls show more rapid biological, cognitive, and social–emotional development in the early years relative to boys. The nature of the divergence at around age 4 is that girls show a more consistent decline or lack of increase in problem behavior than do boys. It may be that in addition to more difficulties in self-reliant behavior, boys lag behind girls in the development of self-reliance and thus the support that boys receive from parents, especially fathers, during this transition period may be more critical for their continued development of self-reliance than for girls. This will be important to investigate in future analyses with the NICHD SECCYD data.

The findings for boys replicate and extend studies in the literature that suggest that mothers' sensitivity and support of their children can enhance their early school achievement through the mediation of the learning-related skills that children bring to the classroom (Estrada, Arsenio, Hess, & Holloway, 1987; McClelland et al., 2000; Pianta & Harbers, 1996; Pianta et al., 1991). The current report extends these findings to suggest that for boys, fathers' sensitive support for autonomy in the transition to school has a significant and unique effect on boy's achievement over and above the mothers' sensitive support for autonomy, which also makes a unique contribution, and that the effect for fathers is mediated by the growth in self-reliance that boys show from Grades 1 to 3.

The findings reported in the current study also support theoretical views that the development of autonomy and self-reliance is a critical aspect of children's early development and is related to school success for both boys and girls and that boys' interactions with parents are important to their development of self-reliance in the early school years. These findings linking self-reliance in the classroom setting with gains in achievement are consistent with findings cited by McClelland et al. (2000). McClelland and colleagues' (2000) research has shown that work-related skills appear to be associated with academic achievement, perhaps because work-related skills are important to children being able to take good advantage of the instruction in the classroom. This aspect of social skills may be particularly important to progress in reading and math achievement in the early grades, and it would seem that it is this aspect of social skills that we are tapping in our observations of self-reliance. The findings cited here highlight the role of self-reliance in supporting the development of academic achievement, in that self-reliance in the classroom and increases in self-reliance from Grades 1 to 3 were strong predictors of achievement gains from 54 months to Grade 3 for both boys and girls.

Self-reliance in the classroom fully mediated the effect of parental sensitive support for autonomy on achievement for boys, but self-reliance also had unique predictability to achievement beyond the impact of parental factors for boys as well as for girls. Thus, the development of self-reliance is important for children, and parent–child interaction is one of the factors important for boys in the development of self-reliance, but there are surely others.

Future work should continue to explore various sources of development of autonomous self-reliance in the early school years. Brody, Dorsey, Forehand, and Armistead (2002) have found unique contributions of parenting processes and classroom processes to children's classroom adjustment with slightly older children. Blair (2002) also suggested that classroom characteristics may be one other source of support for the development of self-reliance in children. It will be important in future analyses with these data to describe the qualities of classrooms that are associated with gains in self-reliance for children in the early school years.

This kind of investigation could inform the controversy over child readiness. Pianta and Rimm-Kauffman (2006) have made the point that there is more to readiness for school than the child's academic and social competencies at entrance to school. Schools must also be ready for children. Some classrooms by their structure and routine may be more successful in promoting self-reliance in children than others. As La Paro and Pianta (2001) asserted, it is likely that the developmental changes taking place in this period are at least in part related to the ecology in which the transformations occur.

In addition, it should be noted that there are potentially other paths through which parents have an impact on their children's achievement. An earlier article using the data from the NICHD Study of Early Child Care and Youth Development (NICHD ECCRN, 2004b) documented that the early learning environment that parents provide is also directly associated with achievement. Other work has found that deliberate efforts by parents to teach emergent literacy skills influence children's alphabet and word-decoding skills (Senechal & LeFevre, 2001). Here, we considered an indirect pathway through the social adjustment of the child in the classroom that we expected to affect how the child benefited from classroom instruction.

This study builds on earlier studies and overcomes some of their limitations. For example, few transition-to-school studies have data from families and classrooms over the early years of school, much of the research is cross-sectional, and few offer data on children's family experiences and child outcomes from sources other than mothers' reports. Associations can be inflated from the use of a single reporter. Most studies also focus only on the role of the mother, excluding consideration of fathering. The rich data and large sample provided by the NICHD SECCYD represented an important opportunity to address these questions using independent sources of data and including both mothers and fathers.

There are limitations to the study that should be noted. The study uses a sample of families recruited from 10 communities. The demographic characteristics of the sample at each of the 10 sites are similar to the demographic characteristics of families in each of those areas of the country, but the sample participants are mostly White and lower to middle class. Further, among these married parents, there were few parents residing in adverse circumstances. The findings may not generalize to families with more

limited resources, to all ethnic groups, or to fathers' contributions when they do not reside with and/or are not married to the mothers. This is an important limitation, as there is little in the literature regarding fathering in these families.

Despite these limitations, however, this study helps fill a gap in our understanding of how parenting factors are linked to schooling and achievement in the early school years. There is evidence that the transition to school is an important period for developing the skills, knowledge, and beliefs critical to later school success (Bornstein, 1989). In these years, the developmental infrastructure is established, on which later experiences can build. Minor differences in the trajectory of the child's adjustment in this period may have disproportionate effects on the direction of the child's school career (Pianta & Cox, 1999).

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