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Parenting and Preschool Self-Regulation as Predictors of Social Emotional Competence in 1st Grade

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Abstract

The current longitudinal study used data from the National Institute of Child Health and Human Development (NICHD) Study of Early Child Care and Youth Development (SECCYD) to examine a model of development that emphasizes early caregiving environments as predictors of social emotional competence (including classroom competence). This path analysis model included features of parenting, emotion regulation, preschool language skills, and attention to predict child outcomes in 1st grade. Early caregiving environments were directly predictive of peer relationship satisfaction, oppositional behavior, social skills, and classroom competence over and above significant mediated effects through preschool self regulation (language, inattention, and anger/frustration). These results suggest that the characteristics of supportive and stimulating caregiving shift in valence over time, such that qualities of the infant-child relationship that are significant in predicting early childhood outcomes are not the same as the caregiving qualities that move to the foreground in predicting primary school outcomes. Implications for school-readiness programming are discussed, including interventions in the early caregiving system to encourage sensitive and supportive parent child interactions to bolster school readiness via the development of social-emotional competence.

Keywords

parental influences; social-emotional learning; self-regulation; caregiver child relationships

Historically, the study of school readiness has neglected children's emotionality, focusing instead on early cognitive and language performance or academic achievement as an ultimate outcome. Recently, however, the field has incorporated other domains of study, including self-regulatory skills and subsequent social and emotional outcomes—marking a

shift to a conceptualization of school readiness that is more comprehensive in representing the development of the whole child. For example, Blair (2002) argues that school readiness requires self-regulatory skills and behaviors that influence competencies spanning social, emotional, behavioral, and cognitive domains. Similarly, Downer and Pianta (2006) reported that social emotional-competencies during the transition to primary school are relevant for both academic and peer outcomes into early adulthood. These are two examples of how children's emotionality—specifically, the regulation of emotion within social contexts—plays a crucial role in how children regulate themselves; each demonstrates that a child transitioning to group learning in the context of primary education confronts self-regulation demands that span both emotion and cognition. Recent literature summarized below, suggests that early parenting is an important antecedent to these child regulatory competencies, yet scant literature longitudinally follows a thread of inquiry from features of caregiving during infancy, through preschool self-regulation, to early elementary school socioemotional outcomes.

Contextual Influences on the Development of Self-Regulation

As noted by Russell, Londhe, and Britner (2013), psychological perspectives on personality and behavior have shifted from assuming the existence of broad and stable dispositions of personality that yield consistency in an individual's behavior across social situations, to an emphasis on context: it is the interaction between an individual's intrinsic qualities and the contextual influences of specific situations that influences behavior. Today, the study of the impact young children's early care environments have on self-regulation spans cognitive and affective domains. Lines of research in the cognitive domain often address attention, language, and memory, whereas those in the affective domain often consider emotion regulation in the context of social interactions with peers, parents, or teachers (Eigsti et al., 2006; McClelland et al., 2007; National Institute of Child Health and Human Development Early Childhood Care Research Network [NICHD ECCRN], 2003; Raver et al., 2011). Indicators of self-regulation are powerful predictors of children's academic and interpersonal success into early adolescence (Eisenberg et al., 2001; Ursache, Blair, & Raver, 2011). Specifically, contextual influences, including the quality of early caregiving relationships and the presence of role models that scaffold self-regulation into social interactions, support adaptive social skills to further shape a child's skill in regulating emotion and cognition (Eisenberg et al., 2010; Gauvin, Fagot, Leve, & Kavanagh, 2002; Rodriguez, Ayduk, Aber, Mischel, & Sethi, 2005; Silverman & Ippolito, 1995).

Feldman and Klein (2003) suggest that socialization, a process begun in early infant-caregiver interactions, provides the context for the development of self-regulation. Caregivers who respond to infant distress and provide comfort and safety help soothe infants and bring them to a state of rewarding calm; similarly, caregivers are key to regulating excitement and joy by knowing when to alter the interaction to reduce the likelihood of overstimulation (Tronick, 2007). Hence, a child who learns to regulate positive and negative affect in the context of the parent-child relationship is also likely to employ these skills as they develop social-emotional competence in future interactions with peers and teachers.

Developing social-emotional competence is important for building adaptive social relationships across childhood, and this process relies heavily on children's early experiences with the social world. Several studies have established significant links between features of early caregiving relationships and attachment security (Bakermans, Kranenburg, van IJzendoorn, & Juffer, 2003; Jacobsen, Huss, Fendrich, Kruesi, & Ziegenhain, 1997; Siegel, 2001). In particular, the longitudinal study of maternal sensitivity and responsiveness suggests that early caregiver interactions bring to bear significant influence on children's later interpersonal and intrapersonal development (Braungart-Rieker, Garwood, Powers, & Wang, 2001; DeWolff & van IJzendoorn, 1997; Lieberman, Padron, van Horn, & Harris, 2005). In the case of a parent sensitively interacting with their infant, the child is likely building a sense of competency as an interactive partner, discovering that dyadic exchanges are satisfying, and learning that others can be trusted to respond to their communicative bids reasonably well. Fuertes, Lopes-dos-Santos, Beeghly, and Tronick (2009) found a continuity for adaptive regulation across the self-and-other domains. These findings are further supported by Raikes, Robinson, Bradley, Raikes, and Ayoub (2007), who found that infants with more effective self-regulation skills are also more likely to elicit positive social relationships over time. Similarly, continuity can be found from less regulatory competence in infancy to subsequent mis-attuned social interactions. In short, when parents provide sensitive infant-caregiver interactions, infants build competent and trusting schemas—or internal working models—as blueprints for developing their social skills in a greater number of future social contexts with peers and teachers.

Children who experience less sensitive caregiving are at risk for social and emotional problems throughout life (Blandon, Calkins, & Keane, 2010). Among the most common obstacles for a caregiver's sensitive responses is maternal depression (Campbell, Cohn, & Meyers, 1995; Teti, Gelfand, Messinger, & Isabella, 1995). Maternal postpartum depression has adverse, lasting effects on caregiving relationship quality (Campbell et al., 2004; Martins & Gaffan, 2000; NICHD ECCRN, 1999), affective and behavioral regulation (Feldman et al., 2009; Maughan, Cicchetti, Toth, & Rogosch, 2007; O'Hara, 2009), and cognitive development (Hay, Pawlby, Waters, & Sharp, 2008; Petterson & Albers, 2001; Sohr-Preston & Scaramella, 2006).

Later, in the preschool years, the emphasis in describing sensitive and responsive care as prompt, accurate, and consistent reactions to the child's behavior shifts toward scaffolding. Rather than studying the dyadic synchrony or coordination of infant cues to maternal responses (Haley & Stansbury, 2003), for example, the characteristics of responsive care may be more an issue of knowing when and how to scaffold or "teach" at an appropriate but challenging level, assist without pressuring to achieve, and balance those times of involved play with opportunities for independent (yet supported) exploration. As responsive care shifts over time to foster more independence, caregiving efforts also shift to attend to the quality of stimulation and support in the home environment for use in independent play (in addition to the supportive qualities of direct interactions themselves).

Self-Regulation During Preschool: A Foundation for School Readiness

Evidence for the evolving nature of sensitive parenting can be found in the literature concerning the effects of caregiving on self-regulation during the preschool years. This literature draws heavily on the development of self-control between the ages of 3 and 4—a crucial component of self-regulation for entering group learning environments that enables children to inhibit a dominant response to a stimuli in order act on a secondary one (sometimes also referred to as inhibitory control (e.g., raising a hand before speaking in class, waiting in line for recess, studying during free time rather than playing with friends) (Eshel & Kohavi, 2003; Kochanska, Murray, & Coy, 1997; Raikes et al., 2007). This literature began with a focus on the influence of children's cognitive capacities on self-control (Mischel, 1983; Peake, Hebl, & Mischel, 2002; Sethi, Mischel, Aber, Shoda, & Rodriguez, 2000), which has evolved to include rigorous examinations of the contextual influences at play (i.e., Feldman & Klein, 2003; Jacobsen, 1998). From these contextual models of self-control, results indicate that maternal presence (Cournoyer & Trudel, 1991; Vaughn, Kopp, Krakow, Johnson, & Schwartz, 1986) and, further, particular components of parenting style, including directiveness or controlling/intrusive parenting, influence this aspect of children's self-regulation (Russell et al., 2013; Silverman & Ippolito, 1995; Silverman & Ragusa, 1990). It is likely that these social influences generalize to other aspects of self-regulation beyond those concerned with self-control, as parental scaffolding in a responsive manner is also likely to shape children's emotion regulation strategies. McKown, Gumbiner, Russo, and Lipton (2009) investigated the significant relationship between children's socioemotional skill and their social skill, highlighting the connection between children's ability to regulate their own behavior and their social competence.

Clearly, implications for children's school-readiness can be found in the study of how contextual influences contribute to children's self-regulation. For example, studies on the importance of social competencies for school readiness emphasize the developmental impact of social interactions from infancy through the preschool years on preparing children for the heightened demands of primary school (Fabes et al., 1999; Ladd, Herald, & Kochel, 2006). Children arrive at school equipped with skills learned in early childhood that can aid them as they adjust to group learning contexts and more rigorous intellectual demands; the question is which skills do they need to carry over from the home environment to the academic setting, and to what extent do these promote adaptive functioning at school? The study of social-emotional competence in early childhood examines relationships between self-regulation—particularly the regulation of negative emotions in upsetting situations—and attentional strategies associated with learning readiness (Belsky, Friedman, & Hsieh, 2001; Berger, Kofman, Livneh, & Henik, 2007). In this work, significant connections between the emotional tenor of the home environment and children's knowledge of emotions and prosocial responses are thought to set the stage for young children's social-emotional competence in the school setting (Raver, 2002). This perspective fits well with work by Rimm-Kaufman and Pianta (2000), who present a framework for the transition to formal education in kindergarten that considers the child and his or her physical and social worlds as a malleable system wherein changes have powerful enduring implications for the child's future academic success. In summary, self-regulation that spans emotion and cognition is

fostered first by dyadic relationships and then evolves into the quality of social skills in preschool and school-age children that affects the child's relationships in school—both in and out of the classroom (Maughan et al., 2007; Raver et al., 2011).

Present Study

The studies reviewed thus far demonstrate the influence of child-rearing on self-regulation, a key component of school readiness, and the subsequent relationships between these and social-emotional competencies. Longitudinal, rigorous examinations of these threads of inquiry are few and far between; thus, questions remain about which aspects of the child-rearing milieu are the most potent in the pathway to school readiness. This article addresses the following questions: (1) How does the early home environment contribute to school readiness for elementary education? (2) How do preschool self-regulation skills support social-emotional competencies in 1st grade? (3) Are the effects of the home environment during the first three years mediated by preschool self-regulation skills, or do early home environments have a direct impact on 1st-grade social-emotional competencies?

Using Feldman and Klein's (2003) suggestion that socialization provides the context for the development of self-regulation, the researchers hypothesized that early child-rearing context would have distinguishable and direct impacts on indices of social-emotional competence in 1st grade, including measures of social competence, loneliness, oppositional behavior, and social skills. They also hypothesized that early child-rearing context would support the development of self-regulation, emotional regulation, and language development during preschool, which would mediate early child-rearing context and support social competencies in 1st grade.

Method

Sample

Participant families in the NICHD Study of Early Child Care and Youth Development (NICHD SECCYD) were recruited in 1991 from hospitals located in 10 locations in the United States. Data collection began that year and continued longitudinally for over a decade; this article focuses on data collected over the first seven years—through the data collection time point anchored in children's 1st-grade year ($n = 1,364$). All study procedures were approved by the human subjects institutional review board at each study site. At enrollment, mothers had an average of 14.4 years of education and they were 28.11 years old on average; 20% of the study children were in minority ethnic groups, 6% were Latino, and 52% were males. Additional details about recruitment and selection procedures are available in prior publications from the study (see NICHD ECCRN, 1999, 2003, or 2005). For the present analysis, the researchers focused on data collected from 15 months old through 1st grade. The analytic sample for this study included 1,264 children for whom there was at least partial data for all measures and whose families passed the exclusion criteria. Families were excluded if the mother was younger than 18 years of age, the family planned to move, the infant belonged to a multiple birth or had a known disability or remained in the hospital more than seven days, the mother acknowledged substance abuse, the mother did not speak

English, or the mother lived more than an hour from the laboratory site or in an extremely unsafe neighborhood as determined by local police.

Procedure

Data included in the present analyses were drawn from four data collection time points in the NICHD SECCYD protocol: 15 months, 36 months, 54 months, and 1st grade. The measures included in this analysis yield data from teacher reports, parent reports, and observational sources collected either in the child's home, in a child care center, or in the laboratory setting. Details on each of the measures are presented in the Measures section. Our rationale for measure selection is presented next, organized by developmental sequence of predictor variables (at 15 and 36 months), mediator predictor variables (at 54 months), and outcome variables (1st grade).

Given the widely recognized threat maternal depression poses to sensitive caregiving and subsequent impacts on attachment quality (Feldman et al., 2009; Hay et al., 2008), we selected a self-report measure of maternal depressive symptoms in the first three years, and observational measures of maternal sensitivity in semi-structured play, caregiving in the home, and infant attachment security. Specifically, we use data from the 15 and 36 month visits, including the Center for Epidemiological Studies Depression scale, Mother-Child Interaction ratings, and the Strange Situation. Additionally, we included data from the Home Observation for Measurement of the Environment (HOME) to provide a more balanced representation of the caregiving milieu, as this measure includes families' provision of a developmentally appropriate, cognitively stimulating environment. The resulting collection of predictor measures for infancy and early childhood includes socioemotional and cognitive indicators of responsive caregiving.

In order to best represent the preschool self-regulatory skills we hypothesized might mediate later social emotional competence, we included measures that capture indicators of either emotion or cognitive regulation from the 54 month home visit and laboratory protocol. Specifically, given the salience of managing negative affect for self-regulation (Belsky et al., 2001), we used data from the anger/frustration subscale of Children's Behavior Questionnaire (CBQ); we also included data on children's attention regulation from the Continuous Performance Task (CPT) and the Preschool Language Scale (PLS).

Data for our final analysis time point in 1st grade (G1) were selected in order to create a representation of children's social-emotional competence that recognizes the developmentally appropriate task this age group faces: taking the self-regulation skills learned in earlier social interactions—primarily the parent-child relationship—and applying them in the context of peer relationships and interactions with teachers at school (McKown et al., 2009). Hence, our selected measures include child self-reports of loneliness and social dissatisfaction, teacher reports of child social skills and problem behavior, and classroom observations of child social competence with peers and teachers.

Measures

Measures that capture the constructs above are presented with more detail in three sets corresponding to their developmental sequence, as follows: (1) caregiving context during the

first 3 years of life, (2) child's preschool self-regulation, and (3) social-emotional competencies in 1st grade. Descriptive statistics for these variables are shown in Table 1.

Caregiving Context During the First 3 Years—*Attachment* was assessed via the Strange Situation (Ainsworth, Blehar, Waters, & Wall, 1978) at 15 months, and a modified Strange Situation (Cassidy, Marvin, & The MacArthur Working Group, 1992) at 36 months. The Strange Situation is a 25-minute procedure involving a series of mother-children separation and reunions designed to elicit and measure children's attachment behavior. In the modified Strange Situation, mother and child are initially put in a room together and then go through a series of separations and reunions. Attachment behaviors are classified as secure (B) or as insecure (A—avoidant, C—resistant, D—disorganized/disoriented, or U—unclassifiable; Main & Solomon, 1990). As in previous studies (e.g., Spieker & Bensley, 1994), we used the continuum of attachment security used by Bretherton et al., 1989. The scores ranged from most to least secure (B3 = 5; B1, B2, B4 = 4; A2, C1 = 3; A1, C2 = 2; and D, U = 1; for further information, see Bretherton, Biringen, Ridgeway, Maslin, & Sherman, 1989 and Spieker & Bensley, 1994). At 15 months, all assessments were double coded and disagreements discussed to reach consensus by three coders. Inter-rater agreement at the level of subcategories was Kappa = .65, $p < .001$. At 36 months, reliability at the subcategory level was Kappa = .47, $p < .001$, based on 867 cases.

Home environment was assessed with the Home Observation for Measurement of the Environment (HOME; Bradley, 1994; Bradley & Caldwell, 1988; Caldwell & Bradley, 1984) at 15 and 36 months. Fifty-five dichotomous items, indexing the quality and quantity of stimulation and support available to children in their home environment, were administered at each interview period (internal consistency $\alpha = .773$ and .865, respectively); endorsed items were converted into a total score at each interview period, total scores were standardized at each interview period, and then the standardized total scores were averaged into a composite scale. Each data collector passed two certification procedures: (1) agreement with the scoring of a “gold-standard” videotape of a HOME administration on 41 of 45 items prior to the onset of the data collection, and (2) agreement with a certified HOME trainer on 41 of 45 items for three videotaped home visits during the course of data collection (NICHD ECCRN, 1997).

Maternal sensitivity was assessed with videotaped semi-structured procedures at 15 and 36 months, observing caregivers' parenting behaviors and child behaviors (Mother-Child Interaction ratings; Egeland & Heister, 1993; NICHD ECCRN, 1999). The recorded procedures were rated by trained coders with regard to different aspects of parenting behaviors, including sensitivity to distress, intrusiveness, supportive presence, respect for child, and so forth. The assessment tool was adjusted to reflect children's developmental stages and appropriate parenting behaviors during a specific developmental period. At 15 months, three 4-point ratings (maternal sensitivity to child non-distress, intrusiveness [reversed], and positive regard; internal consistency $\alpha = .7$) were summed into a composite maternal sensitivity score. At 36 months, the maternal sensitivity composite was created by taking a sum of three 7-point ratings of supportive presence, respect for autonomy, and hostility [reversed] (internal consistency $\alpha = .78$). Inter-coder reliability was determined by assigning two coders to 19–20% of the tapes randomly drawn at each assessment period.

Coders didn't know which tapes were double coded and reliability was assessed throughout the coding period. Inter-coder reliability was calculated as the intra-class correlation coefficient. Correlation coefficients for the composite maternal sensitivity scores were .83 and .84 at 15 and 36 months. For the present analysis, sensitivity scores were standardized and averaged into an overall variable for 15 and 36 months.

Maternal depression was assessed at 15 and 36 month interviews with Center for Epidemiological Studies Depression Scale (CES-D) (Radloff, 1977; Roberts, 1980; Roberts & Vernon, 1983). Twenty depressive symptoms were rated on a 4-point scale at each interview (0 = "rarely or none of the time," 1 = "some or a little of the time," 2 = "occasionally or a moderate amount of time," 3 = "most or all of the time"); scored and summed at each wave (internal consistency $\alpha = .90$ at both 15 and 36 month interviews); and then averaged into a single derived variable. Example items included: "I was bothered by things that usually don't bother me," "I thought my life had been a failure," and "My sleep was restless."

Preschool self-regulation—Anger/frustration was assessed with a subscale of Children's Behavior Questionnaire (CBQ), a parent-reported measure of temperament in children age 3–8 (Rothbart, Ahadi, & Hershey, 1994; Rothbart, Ahadi, Hershey, & Fisher, 2001). At the 54 month interview, mothers were asked to rate items indexing children's reactions to different situations on a 7-point scale (1 = "extremely untrue" to 7 = "extremely true"). Ten items relevant to children's anger/frustration (internal consistency $\alpha = .76$) were scored and then averaged into a composite scale. Example items included: "Gets mad when provoked by other children" and "Becomes easily frustrated when tired."

Preschool language development was measured with the Preschool Language Scale (PLS-3) (Zimmerman et al., 1979), an assessment of children's language development, at the 54 month interview. Forty-eight items, measuring language comprehension and language production abilities, were scored with a 2-point scale: "1 = the pass criterion is met or the child self-corrects a response" and "0 = the pass criterion is not met or responses are partially correct or incomplete." Example items included: "Vocalizes when talked to," "Understands a specific word or phrase," and "Produces basic sentences," and the scored items were summed and then converted into standard scores (mean = 100, SD = 15) in accordance with the scale manual.

Inattention was measured at the 54 month interview with the Continuous Performance Test (CPT), a standardized measure of sustained attention with significant test-retest reliabilities ranging from .65 to .74 (Barkley, 1994; Barkley, DuPaul, & McMurray, 1990; Halperin, Sharma, Greenblatt, & Schwartz, 1991). In the test, study children were asked to press a button when they saw the target object (a chair) in a 2-inch square screen. The number of failures to respond to the target object before the next stimulus appeared (omission errors) was calculated (range from 0–41) to represent children's *inattention*.

Social-Emotional Competencies in Grade 1—Peer relationship satisfaction was assessed with a modified version of the Loneliness and Social Dissatisfaction Questionnaire (Asher, Hymel, & Renshaw, 1984). Study children rated items indexing children's feelings

of loneliness, feelings of social adequacy, subjective estimation of peer status, and appraisals of whether important relationship provisions are being met, with a 3-point scale (1 = “No,” 2 = “Sometimes,” 3 = “Yes”). Example items included: “Easy for you to make new friends?,” “Do you feel left out of things?,” and “Kids you can go to when need help?,” and scored items were averaged into a composite variable (internal consistency $\alpha = .77$).

Oppositional behavior was measured using an a priori subscale of the Teacher Report Form, a standardized assessment of social competence and problem behavior of children (TRF; Achenbach, 1991). This assessment comprises 120 items describing children’s behavioral/emotional problems. Teachers were asked to rate these items with regard to how well each item describes the child (0 = “Not True,” 1 = “Somewhat or Sometimes True,” 2 = “Very True or Often True”). To represent *oppositional behavior*, a priori subscale score was computed by taking a mean of six selected items (e.g., argues a lot [item #3]; disobedient at school [item #23]; stubborn, sullen, or irritable [item #86]; sudden changes in mood or feelings [item #87]; temper tantrums or hot temper [item #95]; and whining [item #109]; internal consistency $\alpha = .79$). These items are the same as those used by Stormshak, Bierman, and the Conduct Problems Prevention Research Group (1998) to distinguish oppositional behavior from aggressive and hyperactive behavior, although we chose to omit item #88 (“sulks a lot”) because, unlike the other six (which were all drawn from the “aggressive” narrow band behavior subscale of Externalizing behavior), this item is from the Withdrawn narrow band subscale of Internalizing behavior.

Social skills were measured with the social skills portion of the Social Skills Rating System (SSRS; Gresham & Elliott, 1990) completed by teachers at 1st grade. Teachers were asked to rate 30 items describing students’ behaviors related to the students’ development of social competence and adaptive functioning, such as sharing, helping, and initiating relationships, with a 3-point scale (0 = “Never,” 1 = “Sometimes,” 2 = “Very often”). Example items included: “Invites others to join in activities,” “Uses free time in an acceptable way,” and “Responds appropriately to peer pressure.” Rated items were summed (internal consistency $\alpha = .93$), and then were converted into a standardized score in accordance with the SSRS scoring manual.

Classroom social competence was measured with the Classroom Observation System (COS), designed to evaluate children’s behavior and the quality of their classroom context. Trained observers scored items indexing children’s behavior (e.g., sharing positive affect) with a 7-point scale (1 = “Uncharacteristic” to 7 = “Extremely Characteristic”) over three observation cycles. Two composite scales—children’s self-reliance and positive affect—were computed by averaging the relevant rated items across the observation cycles, and then were summed into a priori scale to represent the study child’s *competence*. Raw items used to create this composite scale had relatively low reliability (internal consistency $\alpha = .5$).

Plan of Analysis

We examine how early child-rearing context may influence children’s multiple social-emotional competencies in 1st grade, focusing on the role of a supportive home environment and maternal sensitivity during infancy and early childhood. To examine this, a path analysis was conducted using the Mplus Version 6 (Muthén & Muthén, 1998–2010). A path analysis

is designed for estimating linear effects of paths between variables (Bollen, 1989), which is useful for investigating potential mediating mechanisms. The main focus of the current study is on the intervening mechanisms between aspects of the child-rearing milieu and school readiness, and a path analysis is well suited for this task. Comparative Fit Index (CFI = .95), Root-Mean-Square Error of Approximation (RMSEA = .06), Standardized Root Mean Square Residual (SRMR = .08), and a χ^2 -test (a non-significant χ^2) were used to evaluate fit of our hypothesized path model, based on empirical studies (e.g., Hu & Bentler, 1999). As suggested in relevant literature (Anderson & Gerbing, 1988; Weston & Gore, 2006), we cautiously used Modification Indexes to identify potential misfit in a hypothesized model—any re-specification of the analysis model was guided by our theoretical conceptualization rather than statistical considerations alone. Missing data were handled with full-information maximum likelihood (FIML).

Results

The descriptive statistics for all the measures used in the path analyses are presented in Table 1. Figure 1 illustrates our hypothesized model. Table 2 presents the correlations between variables at each time point; of these, only the preschool self-regulation results measured at 54 months fail to correlate significantly. The measures for the two remaining time periods (at 15/36 months and first grade) see highly significant correlations within each set, including some with moderate correlations greater than 0.5. Children's preschool self-regulation skills are hypothesized to mediate the relationship between children's early rearing context (given the positive relationship between HOME and maternal sensitivity ratings; see Table 2) and their social emotional-competence in 1st grade. However, as discussed earlier, features of the early child-rearing context are each hypothesized to exert direct effects on children's social skill outcomes over and above the indirect effects via children's preschool self-regulation skills.

In general, beyond χ^2 test, fit indices suggest that prediction models for all four developmental outcomes fit the data fairly well—(1) for the model predicting students' peer relationship satisfaction, CFI = 1.0, RMSEA = .00, SRMR = .01, and $\chi^2 = 3.26$, $df = 5$, $p = .66$; (2) for the model predicting students' oppositional behavior, CFI = 1.0, RMSEA = .00, SRMR = .01, $\chi^2 = 3.35$, $df = 5$, $p = .65$; (3) for the model predicting students' social-emotional competence, CFI = 1.0, RMSEA = .02, SRMR = .01, $\chi^2 = 6.47$, $df = 5$, $p = .26$; and (4) for the model predicting students' classroom competence, CFI = 1.0, RMSEA = .02, SRMR = .01, $\chi^2 = 7.98$, $df = 5$, $p = .16$). Table 3 shows the statistically significant standardized coefficients for these four prediction models.

Child-rearing context during infancy is associated with children's preschool self-regulation. Children's attachment with their maternal figures at 15 months and 36 months predicts children's inattention problem at 54 months (standardized $\beta = -.08$, $p = .013$, and standardized $\beta = -.11$, $p = .001$, respectively). Attachment classification at 36 months also predicts children's preschool language development (standardized $\beta = .06$, $p = .027$). The quality and quantity of cognitive stimulation and support available to study children in their home environment has a positive association with preschool language development (standardized $\beta = .39$, $p = .000$), and has an inverse relationship with children's inattention

at 54 months (standardized $\beta = -.18, p = .001$). Maternal sensitivity predicts preschool language development (standardized $\beta = .25, p = .001$) and children's inattention at 54 months (standardized $\beta = -.07, p = .05$). Children who were exposed to maternal depression during their infancy experienced more anger and frustration problems during the preschool period (standardized $\beta = .20, p = .001$).

In turn, children's cognitive and regulatory skills during preschool predict multiple social-emotional outcomes at 1st grade. Preschool language development is associated with social skills (standardized $\beta = .16, p = .000$), and, to a lesser extent, classroom social competence (standardized $\beta = .08, p = .051$). Inattention problems at 54 months are associated with decreased peer relationship satisfaction (standardized $\beta = .13, p = .000$) and oppositional behavior (standardized $\beta = .15, p = .000$), and with decreased social skills (standardized $\beta = -.13, p = .000$) and classroom social competence (standardized $\beta = -.14, p = .000$). Anger/frustration at 54 months predicts oppositional behavior (standardized $\beta = .13, p = .001$) and, to a lesser degree, social skills (standardized $\beta = -.06, p = .069$).

There were mixed findings on the direct effects from maternal sensitivity and the HOME (both measured at 15 and 36 months) on children's developmental outcomes in 1st grade. We found limited support of our hypothesis that sensitivity has a direct influence on children's positive or negative outcomes in 1st grade, as this predictor was only significant when considering oppositional behavior (standardized $\beta = -.08, p = .04$). However, the support and stimulation in the child-rearing context (as measured by the HOME) was a significant predictor of all 1st-grade outcomes over and above its mediated effects via school readiness: p (standardized $\beta = -.10, p = .016$), oppositional behavior (standardized $\beta = -.12, p = .004$), social skills (standardized $\beta = .18, p = .00$), and social competence (standardized $\beta = .13, p = .002$).

Discussion

The results presented above present a unique contribution to the literature on the evolving nature of young children's development in the context of home and family life; in particular, this model addresses the shifting impact of the caregiving milieu on children's subsequent social-emotional competence. Describing this shift answers our first research question and supports our hypothesis that features of the caregiving context in the toddler and preschool period would have significant influence on social-emotional competencies in 1st grade. In particular, the characteristics of support provided in the caregiving context, as measured via sensitivity and the HOME, have significant relationships with preschool language (a skill set that serves as a control for self and social regulation; Daugherty & White, 2008; Meissner, 2008; Mercer, 2008; Winsler, Fernyhough, & Montero, 2009) and protect against children's inattention at 54 months of age. Inattention at 54 months was also significantly predicted by attachment at both earlier time points (15 and 36 months), and indirectly by sensitivity, via oppositional behavior. The lack of a matching consistent pattern in the maternal sensitivity results across predictors answers our research question concerning the direct/mediated influence of early caregiving features. These results may be explained by sociodemographic considerations in the SECCYD, as reported by Oxford and Lee (2011), indicating that maternal sensitivity seems to play a more significant protective role for children at

socioeconomic disadvantage, hence when considering the broader SECCYD sample, any such effects may dissipate (see also Raver, 2004).

When we examine our results regarding children's attention regulation, we find answers to our second research question: *How do preschool self-regulation skills support social-emotional competencies in 1st grade?* Kindergartners' inattention is seemingly underpinned by features of the child-rearing context—including the quality of early relationships—and is, in turn, a significant predictor of 1st-grade social-emotional competence. The path from early child-rearing contexts through inattention to social-emotional competencies suggests that the supportive and stimulating features of the child-rearing context seem to lend themselves to attending to people and tasks. Given the results between early child-rearing contexts and 1st-grade outcomes, it seems that caregivers who successfully shift their caregiving in the later preschool years to promote independent problem solving and exploration in a cognitively stimulating and supportive context are best equipping their children for 1st-grade social competence, while simultaneously protecting them against inattention and oppositional behavior problems. Caregiving like this seems to be important to adaptive social-emotional development from infancy forward, because these caregivers “convey to children the rules and structures of language, literacy and problem solving” (Mashburn & Pianta, 2006, p. 158) that support work-related competencies involved in school readiness (McClelland, Morrison, & Holmes, 2000). This differs from the skills emphasized in examinations of parenting sensitivity, which involve more emphasis on synchrony and other features of dyadic relationships and less emphasis on cognitive stimulation. This novel contribution to the field may explain the lack of direct paths from attachment security rating in infancy to 1st grade in our results. Much like Mashburn and Pianta's (2006) perspective on school readiness, the present results echo a need for models of developmental outcomes to go beyond relationship security and the sensitive parenting that supports it, to include considerations of cognitive stimulation in a supportive context.

The present results echo evidence in the school readiness and self-regulation literature that indicates features of caregiving contexts during the first three years are important in language development and protect against inattention—the most consistent and robust learning readiness predictor of social-emotional developmental 1st-grade outcomes in the current study. Children who have good self-control with regard to attention are better situated for adaptive developmental outcomes beyond just academic success (Diamond, Barnett, Thomas, & Munro, 2007; Normandeau & Guay, 1998). One interpretation of this is that toddlers who have supportive, stimulating, and nurturing early caregiving experiences (including those marked by cognitively stimulating environments plus caregiver sensitivity and secure relationships) acquire a set of self-regulation skills that include the management of attention in meaningful ways that reach across multiple contexts: they learn to attend to people and tasks such that they succeed both in and out of school. This form of self-regulation—involving the child's attention system—is clearly related to child-rearing contexts that include “proximal parenting behaviors, such as providing educational interactions and activities, as well as distal practices of making learning materials available at home” (Son & Morrison, 2010, p. 1103).

Limitations

The NICHD SECCYD sample is not nationally representative, as participants were not randomly chosen, and results presented here have limited generalizability by dint of the inclusion criteria used during recruitment (i.e., participants are all English speaking and over the age of 18, did not acknowledge any substance use, and lived in safe locations within a given proximity of the research site; families were excluded if the infant was a twin or other multiple birth or had any medical diagnosis that resulted in an extended hospital stay greater than 7 days). Further investigation on child-rearing context's impact on longitudinal outcomes should strive to sample more inclusively—in particular, the language inclusion criteria and the geographic constraints put on families' residence being within a specified distance from the research site and crime rates in those neighborhoods are all parameters that exclude valuable variations in families' experiences. Similarly, this sample can be considered representative of American child-rearing contexts within the above parameters but readers should note the child-rearing ethnotheory at the core of parent child relationships—and many family practices, including those to support language development or the timing and specific content of early learning experiences in preparation for formal schooling—also vary across cultures (see Harkness et al., 2010).

Beyond the limitations presented by using the NICHD SECCYD sample, measurement obstacles were also evident. Strengthening the preschool self-regulation measure set may have further improved the current results. Ideally, this set of measures would include those that capture self-control and a measure of social skills with peers and parents in addition to emphasizing the attention facets of self-regulation and only the negative affect regulation components currently included.

Implications for Practice

The implications of these results are that intervention in early child-rearing contexts promises to be a powerful path to bolstering children's self and social regulation skills in the service of school readiness. Since toddlers who have sensitive and secure relationships seem to acquire a set of skills that include the management of attention adaptive both in cognitive and social applications, an intervention-oriented interpretation might focus on the importance of social attention. Families might benefit from early interventions that scaffold parent-child activities involving multiple varieties of sustained attention. For example, storytelling activities focused on not just vocabulary building or the narrative comprehension of plot, but also the social and emotional themes within the story and an explicit conversation about the dyadic experience of the activity itself. Such an exercise would encourage families to pay attention to children's emotional intelligence, social awareness, empathy, and reflective functioning, all within the context of a sustained attention activity involving language skills. This same type of activity would be equally beneficial in the preschool classroom setting, where early childhood educators also can incorporate the use of social and emotional themes in storytelling and other language-based activities.

Another important implication for intervention practice is found in the language results, which remind us that language skill is a means of self and social regulation. Our results replicate findings that establish a relationship between child-rearing context and language

skill and urge advocates, educators, and researchers to attend to language skill as important for more than literacy's sake; much like Vygotsky's (1962, 1987) work on the relationship between language and epistemology, our findings demonstrate that language is an organizing tool that aids children in regulating their internal experiences and their relationships adaptively. (For additional discussion of the role of language skills in social emotional development, see Daugherty & White, 2008; Meissner, 2008; Mercer, 2008; Winsler et al., 2009.) Parents and educators can be supported by interventions that encourage the use of language at home as more than an early literacy tool, but to use language at its most basic purpose—as a communication tool to express ourselves and share ideas within social contexts. Our children need more than the orthography and grammar of language to succeed in school—they need the pragmatics of language to navigate social exchange just as much as they benefit from using language to express thoughts and feelings when they are excited, anxious, angry, and thoughtful. In this way, language is a crucial component of self and social regulation.

Conclusion

Understanding the relationships between child-rearing context during infancy, school readiness with an emphasis on the role of preschool self-regulation, and subsequent social-emotional competencies is crucial to the development of effective early childhood interventions in support of school readiness and adaptive social-emotional development. Children's preschool self-regulatory skill at sustaining their attention in individual and group-learning settings emerges as a consistent predictor of children's social-emotional competencies as they enter elementary school. While this pattern is clearly salient to school readiness, beyond addressing the constructs at play, this field of research must consider the features of early child-rearing contexts that contribute to a child's resulting inattention, like the regulation of attention conveyed through stimulating and supportive environments, and the role timing plays in ensuring that the needed emphasis for a particular outcome is evident at the right time. In this vein, the present study suggests that the attention benefits of a stimulating and supportive early child-rearing context, maternal sensitivity, and secure attachments begin during toddlerhood. Further, while sensitivity and attachment seem to lose direct predictive power on social-emotional development after the preschool period, the influence of a stimulating and supporting caregiving milieu persists and makes a significant contribution to 1st-grade social-emotional competencies.

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Figure 1.

Note: Exogenous variables (childrearing context during infancy) are correlated with each other.

Table 1

Descriptive Statistics

Variable	n ¹	M	SD
Predictors			
Attachment			
a. Attachment security at 15 month	1191	3.37	1.34
b. Attachment security at 36 month	1140	3.31	1.24
Home environment (15, 36 mo.)	1258	−0.02	0.90
Maternal sensitivity (15, 36 mo.)	1258	−0.02	0.88
Maternal depression (15, 36 mo.)	1261	9.21	7.29
Mediating Predictors (54 mo.)			
Anger/frustration	1060	4.74	0.83
Preschool language development	1053	99.63	20.39
Inattention	1002	9.13	7.59
Outcomes (G1)			
Peer relationship satisfaction	1006	23.28	5.25
Oppositional behavior	1008	0.18	0.31
Social skills	1001	103.22	13.65
Classroom social competence	966	8.98	1.59

Note: Sample sizes vary because of missing data. As described in the analysis strategy, missing data was handled with FIML which yielded analysis n = 1264;

Table 2

Correlation

	1)	2)	3)	4)	5)	6)	7)	8)	9)	10)	11)
1) Attachment (15 mo.)											
2) Attachment (36 mo.)	.09**										
3) HOME (M. of 15, 36 mo.)	.07*	.13**									
4) Maternal sensitivity (M. of 15, 36 mo.)	.08**	.19**	.54**								
5) Maternal depression (M. of 15, 36 mo.)	-.02	-.10**	-.31**	-.27**							
6) Anger/frustration (54 mo.)	.01	-.05	-.10**	-.08**	.21**						
7) Preschool language (54 mo.)	.07*	.16**	.54**	.48**	-.23**	-.05					
8) Inattention (54 mo.)	-.10**	-.14**	-.23**	-.18**	.08**	.05	-.33**				
9) Peer relationship satisfaction (G1)	-.04	-.08*	-.17**	-.13**	.08*	.03	-.17**	.18**			
10) Oppositional behavior (G1)	-.05	-.06*	-.20**	-.18**	.07*	.15**	-.15**	.20**	.17**		
11) Social skills (G1)	.02	.13**	.32**	.24**	-.14**	-.09**	.32**	-.23**	-.20**	-.51**	
12) Classroom social competence (G1)	.05	.11**	.20**	.13**	-.10**	-.07*	.19**	-.19**	-.11**	-.14**	.27**

Note: a ** statistically significant at .01 level, * statistically significant at .05 level

Table 3

Preschool Self-Regulation (Mediators at 54 mo.)				
Early Childrearing Environment	Anger/frustration	Preschool language	Inattention	
Attachment (15 mo.)	.02	.02	-.08 [*]	
Attachment (36 mo.)	-.02	.06 [*]	-.11 ^{**}	
HOME (M. of 15, 36 mo.)	-.03	.39 ^{**}	-.18 ^{**}	
Maternal sensitivity (M. of 15, 36 mo.)	-.01	.25 ^{**}	-.07 [†]	
Maternal depression (M. of 15, 36 mo.)	.20 ^{**}	-.03	-.01	
R ²	0.05	0.35	0.08	

Social Skills at Grade 1			
Mediators at 54 mo.	Peer relationship satisfaction	Oppositional behavior	Social skills
Anger/frustration (54 mo.)	.01	.13 ^{**}	-.06 [†]
Preschool language (54 mo.)	-.06	-.01	.16 ^{**}
Inattention (54 mo.)	.13 ^{**}	.15 ^{**}	-.13 ^{**}
HOME (M. of 15, 36 mo.)	-.10 [*]	-.12 ^{**}	.18 ^{**}
Maternal sensitivity (M. of 15, 36 mo.)	-.02	-.08 [*]	.05
R ²	0.06	0.09	0.16

Note: a Standardized coefficients are presented, b ** statistically significant at .01 level, * statistically significant at .05 level, † statistically significant at .10 level