ABSTRACT

Title of Document: THE IMPACT OF PARENTING PRACTICES AND EARLY CHILDHOOD CURRICULA ON CHILDREN'S ACADEMIC ACHIEVEMENT AND SOCIAL COMPETENCE

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Doctor of Philosophy, 2006

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Current research highlights the importance of early social competence for later academic success. Nevertheless, despite that documented importance, the emphasis in both policy and practice has been on academic achievement in early learning curricula. The proposed research had three objectives: 1) to understand how parenting behaviors toward children in kindergarten influence their academic achievement in third grade, 2) to understand how curriculum in kindergarten influences academic achievement in third grade, and 3) to ascertain whether social competence mediates the relationship between parenting factors in kindergarten and academic achievement in third grade and curriculum factors in kindergarten and academic achievement in the third grade. Data are drawn for the period 1998-2003 from an existing data set, the Early Childhood

Longitudinal Study – Kindergarten Cohort (ECLS-K) and analyzed using multiple regression analyses.

After controlling for background characteristics and academic achievement in kindergarten, these analyses revealed that the presence of spanking in kindergarten was significantly related to academic achievement in third grade. The presence of spanking in kindergarten was also related to children‘s learning related skills in third grade. Spanking and higher levels of warmth in kindergarten were related to children’s interpersonal skills in third grade. Curriculum in kindergarten was unrelated to third grade academic achievement, social competence, and behavior problems. Social competence in third grade was related to academic achievement in third grade, while behavior problems were not. Finally, social competence mediated the relationship between spanking in kindergarten and academic achievement in third grade.

# THE IMPACT OF PARENTING PRACTICES AND EARLY CHILDHOOD CURRICULA ON CHILDREN'S ACADEMIC ACHIEVEMENT AND SOCIAL COMPETENCE

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Dissertation submitted to the Faculty of the Graduate School of the
University of Maryland, College Park, in partial fulfillment
of the requirements for the degree of
[Doctor of Philosophy]
[2006]

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# Dedication

This dissertation is dedicated to my family. To my mother for her emotional and practical support. She has listened to all of my successes and challenges and read many of my early and later writings. She is my role model. To my father for his encouragement, passion and commitment to my work and my growth as a person. He inspires me to give to other people. To the most wonderful man, my husband Pace whom I was lucky enough to marry during my graduate school journey. He has not only provided me with emotional encouragement in my work and education, but with instrumental support with housecleaning, laundry folding, grocery shopping and, most importantly, in raising our two children. Lastly, I would like to dedicate this dissertation to my two children, Skyler and Sophia. They have taught me more about love and life than any journey I have been on thus far. They bring me such joy.

# Acknowledgements

I would like to thank Dr. Sandra Hofferth for the many ways she has assisted in the direction and completion of this research. Her mentorship has provided professional growth in so many ways. I am forever grateful for her willingness to discuss my proposal drafts, her encouragement and excitement about this project, and her methodical approach to social problems. I will be a better family researcher for having known and worked with her.

I would also like to acknowledge my committee. I specifically would like to thank Dr. Sally Koblinsky. Her dedication to excellence in family research is equally matched by the respect and commitment she gives to the students in the Family Studies Doctorate Program.

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# Chapter 1: Introduction

Kindergarten is a critical period when young children face the challenge of adapting their developing social and cognitive behavior to suit a school environment. Improved academic and social outcomes in kindergarten increase the likelihood that children will be successful in elementary and high school, as measured by greater independence and self-confidence, and later in life, as measured by higher earnings and less reliance on social services (Entwisle, 1995). Unfortunately, not all children are behaviorally or emotionally ready for a school environment, and this can have a negative impact on their long-term success in school. Mounting evidence suggests that children unable to adjust and function in school by the age of eight have difficulty adjusting to later school challenges (Alexander, Entwisle & Dauber, 1993).

New research on children's capacity to learn and on the significance of the early years for later development and learning, paired with early learning standards and high-stakes testing, has resulted in a pushed-down curriculum that places emphasis on academic skills and literacy as early as kindergarten (Blaustein, 2005). The No Child Left Behind Act of 2001, with its requirement for accountability through state and district report cards and testing of children (No Child Left Behind Act of 2001, 2002), exemplifies this emphasis. Thirty-six states now have specific literacy and other academic requirements for children entering kindergarten (Jacobson, 2004). Few of these states include standards for the social-emotional dimension (Scott-Little, Kagan & Frelow, 2004). As a result, many families are eager to have their preschoolers attend programs that teach academic skills and content required to pass these tests (Almon,

2003). One study examining notions of readiness found that kindergarten teachers felt pressure and frustration with these new requirements. According to many of these teachers, "there wasn't enough time to support children's social and emotional development or their need to explore and discover things on their own and prepare them for the academic assessments required during the kindergarten year" (Wesley & Buysse, 2003, p. 395).

A number of child, family, and school factors have been identified as possible causes of poor academic skills in American children. An ecological model, emphasizing the contribution of factors at the individual, family, and school level, provides a framework for examining these factors as they jointly influence academic achievement.

Much of the research at the family level has focused on parenting behaviors believed to stimulate cognitive growth and facilitate academic achievement. For example, reading to children, helping them with their homework, and playing educational games with them have all been shown to foster academic achievement (Hill & Craft, 2003). Parents also affect children's academic success through their interactions with their children. Parents who demonstrate warm and nurturing behaviors in conjunction with setting and enforcing limits and consequences are also more likely to foster academic performance in their children (Raviv, Kessenich, & Morrison, 2004).

Similarly, research at the school level suggests that the type of curriculum used in kindergarten has an impact on academic achievement. Although it was once believed that any well-implemented preschool program would achieve positive academic outcomes (Lazar, Darlington, Murray, Royce & Snipper, 1982), several decades of research suggest that the type of kindergarten curriculum affects later academic

outcomes. Although most child advocates, early childhood education experts, and politicians would agree that the purpose of early childhood programs is to foster both social and academic achievement, there is a lack of agreement on how to achieve these goals. For example, some policy makers and politicians believe that an emphasis on academics for children at younger ages is a solution to the current education crisis. This is exemplified in the No Child Left Behind Act of 2001. Others argue that this approach inhibits long-term intellectual development by fostering superficial learning of simple responses rather than real understanding, problem-solving and creativity (Elkind, 2001; Hirsh-Pasek & Golinkoff, 2003). More research is needed to determine whether one domain is more critical to development and whether this impact is more critical at particular ages of development. Further research is also needed to understand whether some children benefit from a greater focus on academics, whereas others do not.

Past research has examined the role of individual child factors such as IQ, age, and behavior problems in children's academic achievement. In contrast, less attention has been paid to child strengths that may influence academic achievement. For example, there is growing evidence that the social competence of children contributes to adjustment and subsequent academic performance (e.g., McClelland, Morrison, & Holmes, 2000; Raver, 2004). This research is relevant to the current education debate over what the balance between the two domains--academic competence and social competence--should be in order to promote children's optimal school success. The current study extends previous research by looking at two different aspects of social competence: learning-related skills and interpersonal skills.

The current debate over education reform has tended to divide along two axes, the emotional and the academic. Given the current crisis in education (No Child Left Behind Act of 2001, 2002), it is important to learn what fosters academic success and success later in life. As we learn what factors influence children's academic achievement, policy makers, teachers, and parents can benefit from these findings. What is known is that children's success does not result from any single factor. Rather, the children themselves, the way they are parented, and their school experiences all interact in complex ways to affect outcomes. Furthermore, the role that social competence plays in these relationships is of paramount importance. Thus, the proposed research has three objectives: 1) to understand how parenting behaviors toward children in kindergarten influence their academic achievement in third grade, 2) to understand how kindergarten curriculum influences academic achievement in third grade, and 3) to ascertain whether social competence mediates the relationship between parenting factors in kindergarten and academic achievement in third grade and curriculum factors in kindergarten and academic achievement in third grade.

Data for the period 1998-2002 are drawn from an existing data set, the Early Childhood Longitudinal Study – Kindergarten Cohort (ECLS-K). This nationally representative study includes a broad spectrum of children from different ethnic and racial backgrounds and economic circumstances. This study controls within this data set for such factors as achievement in kindergarten, prior learning disabilities, maternal educational level, residence with one or with two parents, maternal depression, and age, gender, race, and income of the family. The study examines various parenting behaviors in kindergarten, their links to academic competence in third grade, and their impact upon

social skills. In addition, this study also examines two curriculum models, their links to academic achievement, and their impact on social competence. Finally, this study investigates the part played by social and emotional development in explaining the effects of parenting and curriculum in the kindergarten year on achievement in children in third grade.

# Chapter 2: Review of the Literature

The current chapter reviews theory and research on the impact of child, parent, and school factors that have been shown to influence children's academic achievement. The chapter begins with a review of Bronfenbrenner's ecological model and its relevance to this study. Following discussion of this theoretical framework are reviews of the literature at the individual level that links social competence to academic achievement. Specifically, two aspects of social competence, learning-related social skills and interpersonal skills, are examined. Next, a review at the parent level that addresses the impact of parental cognitive stimulation, warmth, and discipline on children's academic and social competence will be presented. The chapter concludes with a review of research at the school level examining the role of two curriculum models on children's academic and social competence.

## *Theoretical framework*

A multi-level ecological model provided a framework for organizing and understanding three objectives of this dissertation: 1) to understand how parenting behaviors toward children in kindergarten influence their academic achievement in third grade, 2) to understand how curriculum in kindergarten influences academic achievement in third grade, and 3) to ascertain whether social competence mediates the relationship between parenting factors in kindergarten and academic achievement in third grade and curriculum factors in kindergarten and academic achievement in the third grade.

According to Bronfenbrenner (1986, 1990), child development takes place within the context of the system of relationships that form the child's environment. The five

sources of influence on the development of a child are: the microsystem, the mesosystem, the exosystem, the macrosystem, and the chronosystem. His theory further addresses the various risk and protective factors at each of these levels.

The microsystem is the environment closest to the child and contains the structures with which the child has direct contact. The microsystem is primarily family-centered, but includes the school and peer group as the child grows. The influences of the family extend to all aspects of the child's development. Emotions, behaviors, and cognitions are all developed through input and behavior within the family. Children come to schools largely as a product of the families they are a part of. For example, children's behavior in the classroom is related to how they are parented at home, and the way children are parented at home influences how they interact with other children in school.

The mesosystem provides the connections between the structures of the child's microsystem. The family is the closest and most influential part of the mesosystem, which includes the peer group and the school. Processes in the peer group and school may also influence the individual and the family. At this level, and at other levels less immediate to the child, relationships have impacts that are bi-directional. In other words, parents and schools affect the child; however, the child also affects the behavior and beliefs of the parent and the beliefs and behaviors of the children and teachers in the schools. The interaction of structures within a layer and interactions of structures between layers is central to ecological theory.

The exosystem encompasses the larger societal system, which the child does not interact with directly. Yet structures within this layer affect the child by way of their impact on the child's microsystem. For example, parents' schedules or community resources may not directly affect the child, but they indirectly affect the child via their impact on the amount of flexibility and time the parent has for interacting with the child.

The macrosystem is considered the outermost layer in the child's environment and includes aspects such as cultural values, customs, and policies that impact the child via their influence throughout the interactions of all the other layers. For example, if there is a belief that children will be "left behind" if they have not mastered reading before the age of four, that culture likely puts pressure on parents to choose schools and engage in activities with their children which place academics as a high priority.

The chronosystem represents the dimension of time as it relates to the child's environments. Elements within this system can either be external--such as the timing of the birth of a sibling--or internal, such as the cognitive changes that occur with the development of a child. For example, as children get older, they may react differently to different types of curricular environments and may be more able to integrate how those changes will influence them.

Bronfenbrenner highlights five propositions that describe how relationships developed at home and at school interact for positive development (Bronfenbrenner, 1990). These propositions, in turn, have implications for approaching the crises in schools today from both a policy and a practical standpoint. First, the child must have an ongoing, long-term mutual interaction with his or her parent (or a caring adult) who has stake in the development of the child. Second, this strong bond and pattern of personal

interaction with this adult provide the foundation for the child to relate to the features of his or her mesosystem. For example, the skills and security encouraged by these initial relationships have a significant impact on the child's ability to adapt to situations outside the home, such as life at school. Third, interactions with other adults (e.g., the child's teacher) facilitate the child's ever-growing and changing relationship with his or her parents. Fourth, the relationships that the child has formed with his or her parent can progress only with two-way interchanges and mutual compromise. Children need reciprocal interactions at home and at school, just as parents need these interchanges in their workplaces. Early childhood curricula have a direct impact on the nature of the interactions between children, their peers, and their teachers. Finally, relationships between the child and the adults in his or her life require a public understanding and support for the importance of these roles. Public policies can enable time and resources for these relationships to be nurtured, and can facilitate an understanding regarding the value of these relationships as they relate to the current state of education and our society. Currently there is a crisis in our education system. In order to effectively address this crisis, it is necessary to examine the problem from an ecological perspective.

A review of the literature suggests that children's development of cognitive and social skills is multi-determined at different ecological levels. This dissertation focused on three levels: the individual, the family, and the school, consistent with Bronfenbrenner's person-process-context model of development (Bronfenbrenner, 1986). Child characteristics (individual level), parenting behaviors (family level), and school curriculum (school level) all contribute to children's academic achievement and social competence. For this dissertation, after controlling for individual, family, and school

characteristics, the focus was on how parents and curriculum in kindergarten influence social competence and academic achievement in third grade. This dissertation expanded previous research by examining social competence as a mediator between parenting behaviors and academic achievement, and social competence as a mediator between curriculum and academic achievement (see Figure 1). Thus, a major objective was to understand how early parenting at home might influence children's social skills in school, and how these skills, in turn, influence their academic achievement. Another objective was to understand how early childhood curricula impact children's social skills and how these skills, in turn, influence both what and how children learn in school.

This chapter begins with a review of literature at the individual level, focusing on the link between social competence and academic achievement. Specifically, the role of social competence (i.e., learning-related skills, interpersonal skills) and behavior problems in the development of academic achievement in the third grade is examined. Next, a review at the parent level is presented. Specifically, the impact of three types of parenting behaviors (i.e., warmth, control/discipline, and cognitive stimulation) on academic achievement, social competence, and child behavior problems. Finally, this chapter presents a review of two curriculum models at the school level: the academic directed model and the child-initiated model. Research examining the differential impact of these approaches on children's academic achievement, social competence, and behavior problems is presented

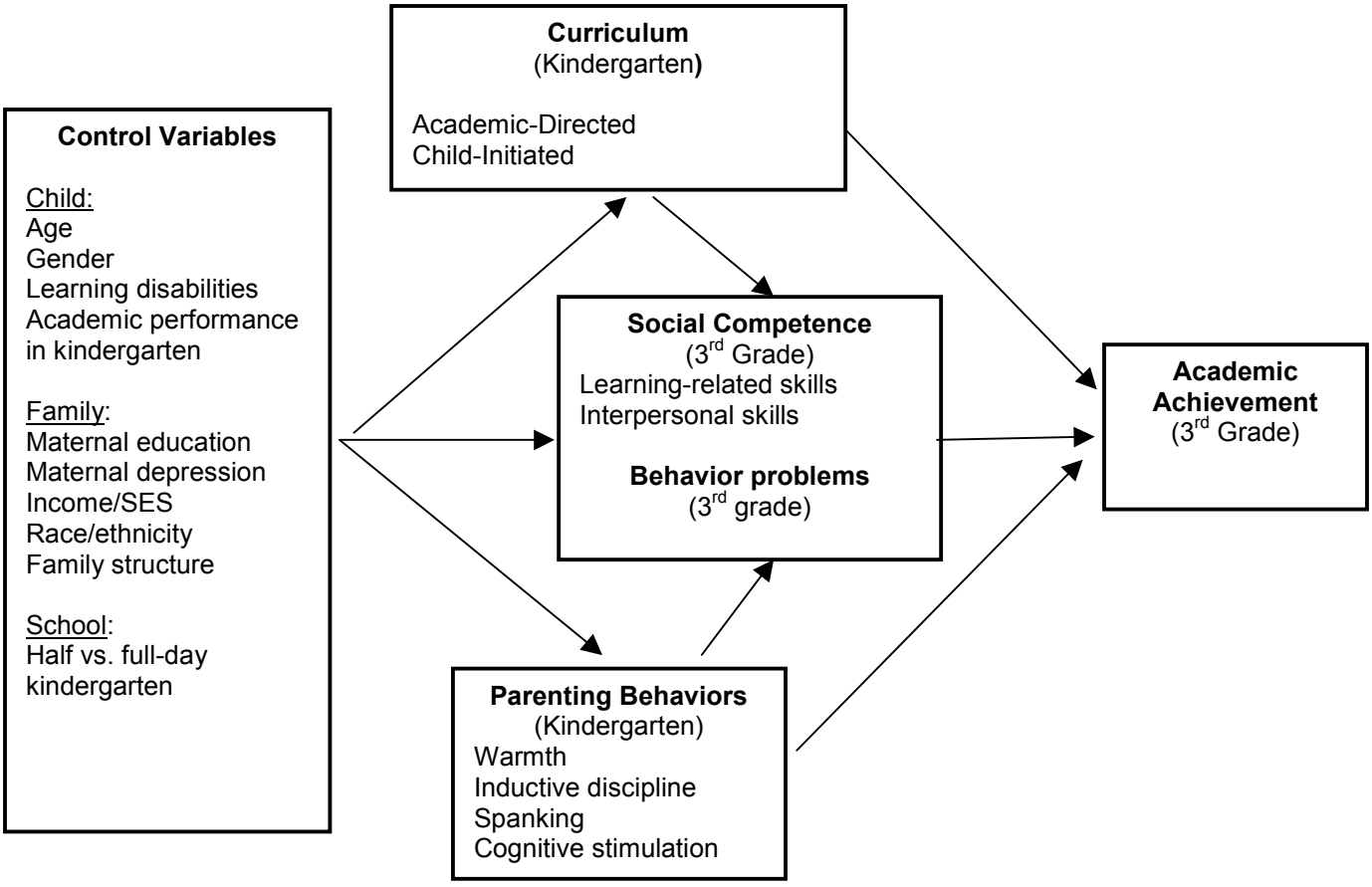


Figure 1: Theoretical Model

*Individual Level: Social Competence*

Over the last twenty years, a series of studies have shown that children's social and emotional skills are linked to their early academic achievement (Raver, 2002). The following section begins with a brief review of problems relating to the theoretical and operational definitions of social competence. Next, a definition of social competence used in this study is presented. This is followed by a review of the research linking children's social competence with academic achievement.

According to Rubin and Rose-Krasnor (1992), definitions of social competence are as abundant as the researchers studying this aspect of development. One expert panel (Anderson & Messick, 1974) given the task of defining the construct produced a list of 29 competency statements. The diverse approaches to conceptualizing and studying social competence within the literature attest to a widespread belief that social competence is a construct with relevance to many aspects of child development. However, this very diversity is also a problem that has limited the contributions of social competence research. For example, lack of clear operational definitions of social competence create problems with measurement that can have both intentional and unintentional implications for links between social competence and underlying theoretical constructs (Meisels, Atkins-Burnett, & Nicholson., 1996; Raver, 2004).

Typically, definitions of social competence incorporate social skills, attainment of social outcomes, development and maintenance of interpersonal relationships; and the ability to read social cues and act accordingly (Meisels et al., 1996). Schaefer and Edgerton (1983) pose a model of social competence that includes academic competence, social adjustment, and psychosocial development that integrates social and emotional

behavior, motivation, approaches to learning, and cognition. It is also important to note that there is conceptual overlap among the subcategories of social competence, further complicating the examination of the specific contributions of social competence.

Social competence in this dissertation is based on the following definition used by Meisels et al. (1996, p. 4) in a paper prepared for the National Center for Education Statistics. These researchers define social competency as "those skills and behaviors of a child that lead to positive social outcomes with the individual residing in a given setting that avoids socially unacceptable responses." This definition will be used in this dissertation.

Historically, the research examining the role of social competence in the development of academic achievement has focused on a single category of social behavior, interpersonal skills. Research on children's interpersonal skills focuses on children's behaviors that lead to success or failure in entering a peer group and making friends. This line of research includes an examination of children's interpersonal behaviors, i.e., actions that contribute to the development and maintenance of friendships. Interpersonal skills include behaviors such as interacting positively with peers, respecting people who are different, and showing empathy to other children.

Recently, a small body of research has started to differentiate specific aspects of social competence that relate to academic achievement (Bronson, 1996; Cooper & Farran, 1991; McClelland & Morrison, 2003; Zsolnai, 2002). Cooper and Farran (1991) and Bronson (1996) have identified two types of social skills: one that is associated with interpersonal skills and one that is associated with learning-related (also refereed to as work-related) social skills. In addition, two instruments, the Social Skills Rating Scale

and the Bronson Social and Task Skill Profile, have been developed that differentiate between interpersonal social behavior skills and learning-related social skills. In general, learning-related social skills encompass a number of behaviors relating to attention, independence, self-regulation, cooperation, organization, and listening and following directions (McClelland & Morrison, 2003). These skills provide the basis for later academic performance by laying the foundation for how children approach learning and behave in the classroom setting.

Although these studies indicate an association between social competence and academic achievement, they do not specify how these aspects of social competence affect academic achievement. Furthermore, problem behavior is not the opposite of social competence. More research needs to be conducted to delineate some of the mediating processes through which social skills and behavior problems may contribute to academic achievement. Given the multifaceted nature of social competence, understanding how this construct impacts academic achievement requires assessments of the multiple aspects of social competence in conjunction with behavior problems and their individual contribution to academic success.

Is it possible that certain parenting behaviors and curriculum models assert their influence on child academic outcomes through mechanisms similar to those in the social-emotional domain? The following section will review research linking interpersonal skills and learning-related skills to academic achievement.

*Interpersonal skills and academic achievement.*

The results of several studies (e.g.,Birch & Ladd, 1997; Caprara, Barbaraneli, Pastorelli, Bandura & Zimbardo, 2000; Ladd, 1990; Ladd, Birch & Buhs, 1999; Ladd,

Kochenderfer & Coleman, 1996; Miles & Stipek, 2006) have shown a significant link between interpersonal skills and academic achievement. In particular, research has shown that socially competent kindergartners are more successful than their less socially competent peers in academics. Other research found that social skills indicators such as peer status often uniquely predicted academic performance even when earlier academic success had been taken into account (Howes & Smith, 1995; Shields, Dickstein, Seifer, Magee & Spritz, 2001).

In a longitudinal research design, Caprara and colleagues (2000) examined the impact of prosocial behavior in early childhood (third grade) on academic achievement five years later ($8^{th}$ grade). Data were based on a socioeconomically diverse sample of 294 children from a residential community in Rome, Italy. Analyses were based on a subsample of 100 children whose third grade academic achievement was assessed. Assessments of prosocial behaviors were obtained in third grade by various methods (self-report, sociometric ratings, and behavior ratings) from different sources (participants, peers, and teachers). Children's interpersonal skills were assessed using a 10-item scale (Caprara & Pastorelli, 1993) that measured degree of helpfulness, sharing, kindness, and cooperation. Sociometric assessments asked children and teachers to select peers (or students) who cooperated, shared, consoled, and helped others. Academic performance was assessed in the third grade using teachers' ratings on the Teacher's Report Form. Eight grade academic achievement was assessed by six different teachers using a composite measure of academic achievement grades across six academic courses.

Results of this analysis showed that early interpersonal skills predicted academic achievement in later grades even after controlling for early academic achievement.

Several possible explanations for these findings were offered by these authors. For example, it was suggested that prosocial behaviors may enhance academic achievement in two ways: by enlisting academic support and guidance from teachers and classmates and by bolstering resilience to depression and behavior problems.

More recently, Miles and Stipek (2006) conducted a longitudinal study of low-income elementary school children to examine associations between social behavior and literacy. The sample included two cohorts of ethnically diverse children (ages 4-6 when the study began): 237 in the kindergarten cohort and 140 in the first grade cohort. Data for the study were gathered from a larger multisite study (The School Transitions Study) of 400 low-income children and families, that followed families from kindergarten or first grade through fifth grade.

Social skills were assessed using teacher ratings on the prosocial subscales adapted from the Child Behavior Scale. Items assessed the degree to which the child exhibited empathy and helping behaviors. Children's literacy was assessed using the Woodcock-Johnson psychoeducational battery-revised test. Comprehension was assessed by reading a passage (kindergarten) or having the child read a passage (first through fifth) and then asking a series of questions about the story.

Results showed positive (contemporaneous) correlations between children's social skills and literacy in kindergarten and first grade. In addition, three out of the four time-lagged correlations showed significant relationships between prosocial skills and literacy for children in kindergarten or first to third grade. At third and fifth grade, however, social skills were no longer significantly correlated with literacy outcomes. These findings for children in the third and fifth grade are inconsistent with past research

which showed relationships between social skills and academic outcomes in older children (Caprara et al., 2000; Wentzel, 1991; Wentzel, 1993). These authors suggest that this inconsistency could be due to the differences in the way that social skills were measured. For example, in a previous study (e.g., Wentzel, 1991) assessments of social skills focused more on behaviors that are likely to influence learning (e.g., adherence to classroom rules and role expectations) than the skills assessed in this analysis (e.g., being empathic and helpful).

*Learning-related social skills and academic achievement.*

Research has shown that children who have poor learning-related skills such as difficulties controlling negative emotions, paying attention, following directions, and getting along with others do less well in school. On the other hand, it has been found that children with higher levels of learning-related skills such as the ability to manage their feelings of anger and distress, and to work attentively, independently, and cooperatively, are more likely to succeed academically (Eisenberg & Fabes, 1992; Green, Francis & Elliott, 1988; Raver & Zigler, 1997; Wentzel, 1991). According to teachers' reports, learning-related skills such as listening to and following directions and complying with the teacher's demands were most important for kindergarten success (Foulks & Morrow, 1989). The following section will review the research on learning-related skills and academic achievement.

Evidence of the importance of learning-related social skills in early childhood comes from a study by Agostin and Bain (1997). The purpose of this study was to identify social and behavioral predictors of academic success, promotion, and retention in the early school years. Participants included 184 kindergarten children from three

elementary schools in a southeastern school district. Social skills and behavior problems were assessed at the end of kindergarten using the following scales from the teacher form of the Social Skills Rating System (SSRS): Cooperation, Self-Control, and Assertion, Externalizing, Internalizing, and Hyperactivity. Academic performance was assessed using the Stanford Achievement Test (SAT).

Results showed that children's learning-related skills, such as their ability to regulate their emotions, attention, and impulses, were significantly related to whether children were promoted or retained in kindergarten even after statistically controlling for their memory, language, and motor skills. Specifically, the Cooperation, Self-Control, and Externalizing Behaviors of the SSRS were found to be significant predictors of academic achievement and promotion in the early grades. It is important to note, however, that the actual reasons that the students were promoted or retained were not examined.

Another study (Alexander et al., 1993) used a sample of 790 randomly selected first grade children to examine the effects of learning-related skills on academic performance over a four-year period. Beginning first graders were selected from twenty public elementary schools in Baltimore City. Homeroom teachers assessed socio-emotional competence using a14-item measure adapted from the National Survey of Children representing three domains: Interest-Participation (I-P), Cooperation-Compliance (C-C), and Attention Span-Restlessness (A-R). Academic performance was assessed using teacher report of reading and mathematics and children's scores on verbal and quantitative subtests from the California Achievement Test (CAT) battery. Each

outcome was evaluated over three time periods: the end of the first, second, and fourth years in elementary school.

After controlling for gender, race, family SES, and prior achievement levels (i.e., CAT performance from the beginning of the school years), results showed that learning-related skills had significant effects on academic performance in all three years, with large effects on academic performance in the first year. Specifically, children who were interested and involved in their school activities were better able to focus and pay attention which, in turn, led to better academic performance. Interestingly, interpersonal skills (assessed using the Cooperation scale) had no effect on academic performance in any of the three years.

Additional insight as to which early social behaviors influence later academic achievement comes from a short-term longitudinal study by Ladd, Birch, & Buhs (1999). The purpose of this study was to identify specific interpersonal attributes of the children's social behaviors that were related to their classroom behavior and academic achievement. These scholars propose that children's prosocial behaviors affect academic achievement through their indirect influence on classroom participation. Specifically, children's prosocial behaviors were hypothesized to yield various social supports or stressors that facilitate children's cooperative and independent classroom behaviors, which, in turn, enhance academic achievement.

The sample consisted of 200 full-day kindergarten children and their teachers from the midwestern United States. Children's social behaviors were assessed through observations conducted by trained observers several times per week during the first 10 weeks of kindergarten. Data were gathered during free play. These observations were

coded and summed to create a prosocial behavioral composite consisting of three categories: social conversation (non-hostile face-to-face-talk), cooperative play (non-disruptive mutual activity with others), and friendly touch (benevolent physical interaction). Learning-related skills were assessed using teacher ratings on the Cooperation and Independent subscales of School Adjustment (TRSSA) during the 13th to 16th weeks of kindergarten. The Cooperative Participation subscale measures the extent to which the child complies with classroom rules and responsibilities and accepts the teacher's authority, while the Independent Participation subscale taps the extent to which children display independent, self-directed behaviors. Achievement was assessed by trained interviewers near the end of the kindergarten year using the Visual and Quantitative composites of the Metropolitan Readiness Tests (MRT) – Level II.

After controlling for entry factors (child's gender, cognitive maturity, and earlier preschool experience), results showed that children who evidenced prosocial styles early in kindergarten tended to develop more adaptive learning-related skills, as evidenced by higher levels of independence and cooperation in the classroom. In turn, those with higher learning-related skills had higher levels of academic achievement at the end of kindergarten when compared to children with lower levels of learning-related skills.

A number of studies have documented the unique contribution of learning-related skills to academic performance over and above the contribution of children's interpersonal skills (Bronson, Tivnan & Seppanen, 1995; Cooper & Spence, 1988; McClelland & Morrison, 2003; McClelland et al., 2000; McClelland & Hansen, 2001). For example, Cooper and Farran (1988), in a study of 165 kindergarten children, showed

that, according to these children's teachers, having low interpersonal skills was not as detrimental to academic performance as was having poor learning-related skills.

More recently, McClelland, Morrison and Holmes (2000) conducted a longitudinal study to examine whether learning-related skills would predict unique variances in academic outcomes at the beginning of kindergarten and three years later (the end of second grade) after controlling for several important child factors (preschool experience, IQ, entrance age) and family factors (parental education, family literacy environment) and sociocultural (ethnicity) factors. Participants included a sample of 540 children who had participated in a longitudinal study in Greensboro, NC (Christian, Morrison, & Bryant, 1998).

Social skills were assessed at the beginning of kindergarten using two subscales (learning-related and interpersonal skills) of the Cooper-Farran Behavioral Rating Scale (CFBRS). Academic achievement was assessed using the reading, mathematics, and general information subscales of the Peabody Individual Achievement Test – Revised; the Peabody Picture Vocabulary Test – Revised; and an Alphabet Recognition Test.

Results indicated that learning-related skills predicted unique variance beyond interpersonal skills in all academic outcomes at the beginning of kindergarten beyond the influence of child, family and sociocultural factors. In the spring of second grade, learning-related skills predicted academic skills after controlling for kindergarten academic performance and the influence of the other child, family, and sociocultural variables. In addition, learning-related skills predicted unique variance in reading and mathematics, but not general information or vocabulary. More importantly, social and

emotional adjustment in preschool children was a better predictor of academic achievement in first grade than cognitive skills and family backgrounds.

The findings in this study indicate that social skills and particularly learning-related skills at the beginning of kindergarten have a significant influence on the development of academic learning over a three-year period of time. Caution is warranted when interpreting these findings due to the study's large attrition rate. This study documented a large attrition rate from the fall of kindergarten to the spring of second grade, with the sample size decreasing from 540 to 295. An analysis comparing the original group to those remaining suggested that the group who left the study had proportionally more African American children, lower maternal education levels, and lower IQ levels (Griffin & Morrison, 1997). All of these demographic characteristics have been found to be risk factors for low academic achievement.

Additional support for the positive influence of learning-related skills on academic achievement comes from the results of a follow-up to McClelland and colleagues' (2000) study by McClelland and Hansen (2001), which showed that "children rated as having poor learning-related skills in kindergarten remained statistically significantly behind their peers in reading and math between kindergarten and sixth grade, with the gap widening over time."

To summarize, the research on children's social competence, including both interpersonal and learning-related skills, indicates that higher levels of interpersonal and learning-related social skills facilitate academic achievement. Short-term findings show that interpersonal skills and learning-related skills impact academic learning. Findings from longer-term studies over the course of three or more years show that learning-

related skills continue to affect academic achievement, but the links between interpersonal skills and academic achievement are less clear over extended periods of time. Could it be that early interpersonal skills set the foundation for learning-related skills in the classroom, and, in turn, these learning-related skills have long-term implications for academic achievement?

*Child behavior problems and academic achievement.*

Although the association between learning-related skills and academic achievement is in the positive direction, the link between behavior problems and academic achievement is in the negative direction. In other words, child behavior problems are related to lower levels of academic achievement. This link between child behavior problems and academic underachievement has been well documented (Dishion, 1990; Hinshaw, 1992; Jimmerson, Egeland, Stroufe & Carlson, 2000; Kupersmidt & Coie, 1990; Ladd et al., 1999). Specifically, young children who act in antisocial and aggressive ways participate less in classrooms and are at risk for lower academic achievement than their more socially competent counterparts (Jimmerson et al., 2000; Kupersmidt & Coie, 1990).

In the Agostin and Bain (1997) study, significant negative correlations were found between behavior problems in kindergarten (as measured by the externalizing and internalizing behavior problems sub-scales of the Social Skills Rating System (SSRS)) and academic achievement one year later. Specifically, higher scores on the Internalizing subscale were associated with lower scores on all four Stanford Achievement Test (SAT) subtests. Higher scores on the SSRS Hyperactivity subscale were associated with lower SAT Total Reading, Math, and Language scores, but not with SAT Listening. Finally,

higher scores on the SSRS Externalizing subscale were associated with lower scores for SAT Language. In addition, results of secondary analysis showed that SSRS Internalizing and Externalizing Behaviors significantly discriminated among groups of children being promoted or retained for the end of the 1991-1992 school year with scores on the SSRS Internalizing Behaviors scale emerging as one of the best predictors out of the six SSRS subdomains.

Further evidence of the impact of behavior problems on academic achievement in early childhood comes from Ladd, Birch, & Buhs' (1999) study of 200 kindergarten children. An antisocial behavior composite was created by summing the scores for three types of behaviors: aggression, object possessiveness, and arguing. Results showed that children's antisocial behaviors had negative effects on their academic achievement at the end of kindergarten. Interestingly, these effects were mediated by learning-related skills. In this case, children who were observed engaging in more antisocial behaviors were less likely to cooperate with classroom rules and teacher directions, and less likely to engage in classroom activities in an independent manner. These classroom behaviors, in turn, resulted in lower levels of academic achievement.

Specific relationships between child behavior problems and academic achievement may, in part, depend on learning-related skills. Could it be that learning-related skills mediate the relationship between child behavior problems and academic problems? Although past research has shown that antisocial behavior and delinquency have strong associations with academic problems (Frick et al., 1991), these studies did not take learning-related skills into account. A few studies (August & Garfinkel, 1990; Clark, Prior & Kinsella, 2002; Hinshaw, 1992) provide evidence of a possible mediating

role of learning-related skills on the relationship between child behavior problems and academic achievement. The following section will review some of this evidence.

In general, inattention and hyperactivity are stronger correlates of academic underachievement in childhood than is aggression (August & Garfinkel, 1990). One longitudinal study (Caprara et al., 2000) of third graders (previously mentioned) showed that early aggression had no impact on academic achievement five years later. Hinshaw (1992) concluded that early attention problems (e.g., Attention Deficit Hyperactivity Disorder) are more robust predictors of reading problems than antisocial behavior. Clark et al. (2002) found similar results from a sample of 110 adolescents. Specifically, the presence of ADHD (attention problems) was associated with lower word recognition scores, while the reading levels of adolescents with ODD/CD (antisocial problems) were similar to those without behavior problems.

For example, Eisenberg and colleagues (2000) conducted a study to examine the role of children's behavioral and attention regulation (two aspects of learning-related skills) in kindergarten in externalizing behavior problems in the third grade. The sample included 169 European-American kindergarten children. Measures of attentional control, behavioral regulation, and problem behavior were obtained at both points in time. Attention regulation was assessed using parents' and teachers' reports on the attention shifting and attention focusing subscales of Rothbart's Child Behavior Questionnaire. Behavioral regulation was assessed by trained experimenters with a puzzle box task. Children were asked to assemble a wooden puzzle without looking at the solution. The seconds a child persisted on task without cheating were used to assess behavioral regulation. Parents' and teachers' reports on the Block and Block Q-sort (Block &

Block, 1980) were used to measure ego control. Externalizing behavior problems were assessed by parents and teachers using the 24 item screening measure from the Lochman and Conduct Problems Prevention Research Group.

Results of this analysis showed that attention regulation and behavior regulation predicted children's later externalizing behavior problems. Several limitations of this study affect the generalizability of this research. First, the sample was mostly Caucasian. In addition, analysis of differences between families who left the study and those who remained showed that the families who left tended to be from minority groups, particularly African American.

More research is necessary to understand how child behavior problems hinder academic development. As mentioned above, using measures that tap learning-related skills, such as attention regulation, might provide additional insights into how early child behavior problems undermine academic success. Most research has examined internalizing and externalizing behavior problems separately. More research is necessary to understand how total behavior problems hinder academic development. Total behavior problems may be an important factor in academic achievement.

Family Level: Parenting

Three general parenting constructs that impact children's academic achievement, social competence, and behavior problems have been defined: 1) warmth, 2) discipline, and 3) cognitive stimulation (Darling & Steinberg, 1993; Hart, Newell & Olsen, 2003; Maccoby & Martin, 1983). The first section will review the impact of warmth, discipline, and cognitive stimulation on academic achievement. A discussion of the role of these parenting behaviors in children's social competence will follow.

*Parenting behaviors and academic achievement.*

*Parental warmth and academic achievement.*

Parental warmth has been described as "the composite degree of sensitivity mothers display to children's cues, including promptness, acceptance of reactions, acceptance of interest, amount of physical affection, positive affect, and tone of voice" (Landry, Smith, Miller-Loncar & Swank, 1998, p. 111). Numerous studies (Coates & Lewis, 1984; Raviv et. al., 2004; Smith, Landry & Swank, 2000) across various disciplines show that parenting behaviors characterized by warm sensitivity to children's feelings are positively related to children's academic skills. These studies have involved children from various ages, including children from infancy to adolescence. For example, Smith et al. (2000), in a longitudinal study, demonstrated that greater use of this behavior in mothers across infancy was associated with higher levels of cognitive and language skills in preschool.

Recent evidence comes from a study examining the influence of warm sensitivity on three-year olds' expressive and receptive language abilities (Campbell & von Stauffenberg, 2005). Data were collected from 1016 families from the NICHD Study of Early Child Care and Youth Development. Maternal sensitivity was assessed using a semi-structured mother-child play session conducted in the lab. Child language outcomes were assessed using the Reynell Developmental Language Scales and the Bracken Basic Concept Scale when the children were 36 months old. After controlling for SES and cognitive stimulation, results of this secondary analysis showed that expressive language ability, verbal comprehension, and receptive verbal conceptual skills were associated with higher levels of parents' warm sensitivity. While the sample used in this study

included a wide range of socioeconomic characteristics, a post hoc analysis suggests a possible limitation, in that the sample was not nationally representative.

Further support for the positive impact of parental warmth on academic achievement comes from a study by Petit and colleagues (Petit, Bates & Dodge, 1997). These researchers investigated the impact of parenting behaviors prior to kindergarten on children's academic performance in kindergarten and grade 6. A nationally representative sample of 585 families participated in the initial data assessment prior to kindergarten as part the Child Development Project, a longitudinal study of early family social experience precursors to children's social and behavioral adjustment (Dodge, Petit & Bates, 1994). Children's academic performance in kindergarten and grade 6 was assessed using teacher reports and school records. Children's academic performance in kindergarten was predicted by a combination of parental warmth and involvement, and grade 6 academic achievement was predicted by a combination of inductive discipline (calm discussion) and involvement (mother's reported involvement in child's social contact with peers).

One caution in the interpretation of these findings related to the measurement of parental warmth. This variable was assessed during a single home interview prior to kindergarten. Observation time was limited to mother child interactions upon greeting the interviewer, during transitions, and at the end.

To summarize, a number of studies suggest that parental warmth in the early years may facilitate children's academic development as evidenced through the positive relationship with later academic achievement. In addition, these studies have included

children from various economic and racial backgrounds, including one nationally representative sample (e.g. Petit et al., 1997).

*Parental discipline and academic achievement.*

Past research has indicated that corporal punishment and power assertive discipline are two methods of discipline that have negative associations with children's academic achievement. Corporal punishment has been defined as the use of physical force with the intention of causing physical pain, but not injury, for purposes of correction and control (Straus, 2001). Power assertion involves restrictive methods of control including coercion, harsh discipline, negativity, and criticism (Kuczynski & Kochanska, 1990). In contrast, parents who use inductive discipline guide children's behaviors by introducing limits and setting up logical consequences and then explaining rationales that support them (Burleson, 1983).

While most of the studies on discipline and academic achievement have focused on adolescents, several studies have been conducted on children in the preschool through kindergarten years. Compelling evidence of the link between academic achievement and inductive discipline comes from a longitudinal study by Petit et al. (1997). Specifically, this study of children from kindergarten to age six showed that children's grade 6 academic achievement was predicted by a combination of inductive discipline (calm discussion) and involvement (mother's reported involvement in child's social contact with peers).

Although research on the effects of corporal punishment has historically focused on the association between corporal punishment and behavior problems such as

aggression and delinquency, recent evidence suggests that corporal punishment also has negative effects on children's academic outcomes (Arias & Pape, 1999; Straus, 2003). For example, Straus (2003) examined the impact of corporal punishment on academic achievement in a cohort of 622 five and six-year-old children who were part of the National Longitudinal Survey of Youth (NLSY). African Americans (29%), Caucasians (49%) and Hispanic-Americans (22%) were represented in this study. Corporal punishment was assessed at Time 1 (1992) using the following question: "Sometimes kids mind pretty well and sometimes they don't. About how many times, if any, have you had to spank your child in the past week?" Academic achievement was measured two years later (1994) using the Peabody Individual Achievement Test (PIAT).

After controlling for a number of variables associated with academic achievement (e.g., 1992 PIAT score, child's behavior problems, maternal education, gender and race of the child, maternal age at birth of child), the results showed that corporal punishment was negatively associated with academic achievement at ages 7 and 8. Specifically, frequency of spanking was significantly associated with a decrease in PIAT score two years later for both African Americans and white participants. One limitation of this study, however, was that the questions used to assess spanking did not differentiate between those who were never spanked and those who were not spanked during the seven days immediately before the interview. In addition, it is hard to draw conclusions about the impact of corporal punishment when intensity of spanking was not assessed.

Taken together, research suggests that type of parental discipline in the early years is associated with later academic achievement. Specifically, inductive discipline and the absence of spanking have been related to higher levels of academic achievement,

while the use of corporal punishment, one form of power assertive discipline, has been shown to be harmful to academic achievement. More longitudinal studies need to be conducted in order to understand the impact of early corporal punishment on children's subsequent academic achievement.

*Parental cognitive stimulation and academic achievement.*

Several studies (Campbell & von Stauffenberg, 2005; Eamon, 2005; Grolnick & Slowiaczek, 1994; Hart & Risley, 1992; Hill & Craft, 2003; Izzo, Weissberg, Kasprow & Fendrich, 1999; Whitehurst & Lonigan, 1998) have shown that parents influence children's academic achievement through their involvement in activities that enhance cognitive learning, such as reading to their children, supplying cognitive games and reading materials, and modeling appropriate use of language. All of these behaviors have been described as cognitive stimulation (Grolnick & Slowiaczek, 1994).

Izzo et al.'s (1999) longitudinal study of 1,205 urban kindergarten through third grade (Year 1) children supports the finding that parental participation in educational activities at home has a positive effect on children's academic achievement three years later. Home involvement in cognitive stimulation was assessed in Year 1 using teacher's reports on the Teacher-Parent Survey (T-PS). Academic achievement was assessed three years later using the math problem solving and reading comprehension sub-test scores of the Metropolitan Mathematics Instructional Tests and Reading Instruction Tests.

After controlling for Year 1 school performance, home participation predicted both math and reading achievement three years later. Limitations of this study should be noted. First, the home involvement assessment was based solely on teacher reports. It could be argued that teachers who knew little about parental involvement in cognitive

activities might have based scores on these measures of children's school performance. In addition, teachers reported being unaware of at least 1/3 of all the parents studied. Other important factors that could impact the relationships between involvement and academic successes (e.g., parental education level) were not assessed. A third limitation was the high attrition rate reported. Nevertheless, cognitive stimulation had a positive long-term effect on kindergarten children's academic achievement.

Other support comes from a cross-sectional study by Hill and Craft (2003). This study examined the influence of parental cognitive stimulation on academic achievement in a sample of 103 kindergarten children from three ethnically diverse public elementary schools in a southeastern suburban city. Mothers and teachers assessed levels of parental cognitive-intellectual involvement by using the Home Activities Scale of the Parent Teacher Involvement Questionnaire. Children's school achievement was assessed in the late spring of the kindergarten year using two subscales of the Metropolitan Readiness Test, Level 2. The Sound-Letter Correspondence scale was used to assess reading and the Quantitative Concepts scale was used to assess math.

Results showed that cognitive stimulation was a significant predictor and, along with other measures of involvement (e.g., school involvement and valuing education), explained a significant amount of the variance in kindergarten academic achievement. Specifically, results showed that cognitive involvement in home activities was significantly related to children's math achievement. One limitation of this study was its small sample size (n=103). Thus, longitudinal and cross-sectional research using racially and economically diverse populations supports the positive association between cognitive stimulation and later academic achievement in kindergarten age children.

Taken together, research studies provide empirical evidence that early parenting behaviors such as warmth, sensitivity, inductive discipline, and cognitive stimulation facilitate academic achievement in children. The next section will review research examining the impact of these parenting behaviors on children's social competence.

*Parenting behaviors and social competence*

Not only does the research support the link between parenting behaviors and academic achievement, it also supports the link between parenting behaviors and social competence.

*Parental warmth and social competence.*

Parenting behaviors such as warmth and sensitivity have been described as playing an important role in the development of social competence in children. This form of positive emotional support has been linked with children's cooperation, regulation of emotions, prosocial behaviors, and peer acceptance in children from infancy through adolescence (Grusec & Goodnow, 1994; Maccoby & Martin, 1983; Miller-Loncar, Landry, Smith & Swank, 2000).

Evidence of this association in younger children comes from a 4-year longitudinal study by Landry et al. (1998), in which the relation between maternal interactive styles and social competence was examined in 299 urban and rural, low socioeconomic status families. Maternal warmth and child social competence variables (e.g., responsiveness, initiation) were assessed at 6, 12, 24, and 40 months during a two-hour home visit that included a 10-minute toy play session and a 60-minute daily activity. Results showed that higher levels of warm sensitivity predicted higher levels of social competence four years later.

*Parental discipline and social competence.*

Various types of parental discipline have also been linked to social competence in children of various ages. Research suggests that children who cope skillfully with the demands of peer interactions have mothers who use inductive discipline. As mentioned earlier, parents who use inductive discipline strategies are able to set and enforce limits as well as support children's attempts at autonomy and mastery (Baumrind, 1971; Denham, Renwick & Holt, 1991; Hart, DeWolf, Wozniak & Burts, 1992; Petit et al., 1997). Specific links have been shown between inductive discipline and greater self-control, enhanced communication skills, prosocial behaviors, and peer acceptance. On the other hand, research shows that parenting that involves power-assertive disciplinary tactics results in decreased socialization skills (Kennedy, 1992).

Denham (1991), in a cross-sectional study of 48 preschool children and their mothers, examined the relationship between maternal discipline and children's social skills. Maternal discipline strategy was observed during the performance of four play/teaching tasks with children. Two independent observers rated the mothers on a seven-point scale that matched the mother's behavior during four play/teaching tasks to the most similar episode/scale point during the teaching tasks. Social skills were assessed by the children's preschool teachers using the friendliness and assertiveness scales from Baumrind's Preschool Behavior Q-Sort.

Results showed that maternal task orientation, including the ability to create appropriate structure and limits, and the allowance of autonomy, was associated with

preschoolers' positive social behavior and assertion. The generalizability of these findings should be interpreted with caution. The sample size was relatively small (n=48), limited to middle to upper class families, and did not mention racial/ethnic differences.

Further evidence of the impact of parental discipline comes from the work of Hart et al. (1992). This study examined the relations among 106 mothers' and fathers' self-reported discipline styles and preschoolers' playground behavior and peer status. Disciplinary styles were assessed through home interviews that measured parents' responses to seven hypothetical situations describing disciplinary contexts. Parents were asked to mention all possible strategies they would employ for each situation. Children's behaviors were assessed by independent observers during 20-35 minutes of free play on the playground over a 4-6 week period, and peer status was measured through peer nominations.

Results showed that children's peer status was predicted by parental discipline styles. Specifically, children of mothers who used inductive discipline exhibited fewer disruptive playground behaviors and were more preferred by their peers when compared to children whose parents engaged in power assertive behaviors. Child behaviors were found to mediate maternal discipline and peer status, suggesting that maternal discipline may be linked to peer status through social behavioral mechanisms.

Several limitations with regard to the generalizability of these results should be considered. First of all, the majority of this sample comprised Caucasian, upper- middle-class, intact families. Second, the discipline measure was based on parental responses to hypothetical situations as opposed to actual observations of parent-child interactions. It is sometimes difficult to rule out the influence of parents' desire to make a favorable

impression on the interviewer and thus bias the answers. Given the nature of this research design, it is equally likely that the children's behaviors could precede and evoke parental disciplinary strategies, which, in turn, could affect peer acceptance. More longitudinal research is needed to understand the direction of these relationships.

*Parental cognitive stimulation and social competence.*

Research on the impact of parental cognitive stimulation on social competence has been well documented (e.g., Fantuzzo, Davis, & Ginsberg.M.D, 1995; Hill & Craft, 2003; Izzo et al., 1999; Marcon, 1999; Reynolds, 1991). For example, Izzo and colleagues (1999), in a sample of 1,205 children from kindergarten to third grade, measured the impact of parental cognitive stimulation on social competence three years later. Teachers' reports on the competence scales and the problem subscales of the Teacher-Child Rating Scale (T-CRS) were used to measure school engagement and socio-emotional adjustment. Items on the competence subscale included frustration tolerance (e.g., "copes well with failure"), assertive social skills (e.g., "expresses ideas well"), task orientation (e.g., "functions well even with distractions"), and peer social skills (e.g., "makes friends easily"). Items on the problem subscale include acting out (e.g., "constantly seeks attention"), shy-anxious behavior (e.g., "anxious, worried"), and learning problems (e.g., "poor work habits"). School engagement (or learning-related skills) was based on the sum of the acting out, learning problems, task orientation, and frustration tolerance scales. Socio-emotional or interpersonal adjustment was based on the sum of the shy-anxious, peer social skills, and assertive social skills scales.

Results showed that teachers' perceptions of greater parental participation in cognitive activities at home (Year 1) were associated with both school engagement and

social-emotional adjustment (Year 3) even after controlling for Year 1 school performance (which included both social measures and academic achievement measures). Thus, perceived parental cognitive stimulation influenced children's social competence three years later.

In another study, Hill & Craft (2003) examined the association between parental cognitive stimulation and children's social competence in a group of 103 kindergarten children. Cognitive stimulation was assessed using mother's report on the Parental Involvement in Home Activities (Home Involvement) scale. Social competence was assessed at the beginning of the kindergarten year by mothers using the Emotion Regulation and Prosocial Communication Scales from the Children's Social Competence Scale. Teachers assessed children's academic competence using the Authority Acceptance Scale of the Teacher Observation of Classroom Adaptation – Revised/Social Health Profile and the Academic Behavior Scales of the Children's Social Competence Scale. The Authority Acceptance scale taps social skills relating to classroom behaviors including cooperativeness and the Academic Behavior Scale taps abilities such as task persistence and self-initiated learning. Academic achievement, as mentioned previously, was assessed using the Metropolitan Readiness Test.

Results showed that higher levels of parental cognitive involvement in kindergarten were significantly related to higher levels of social competence (prosocial communication skills) at the end of the kindergarten year. Interestingly, prosocial communication skills among peers accounted for the relationship between cognitive stimulation at home and academic achievement in school. In particular, cognitive involvement was positively related to emotion regulation, which, in turn, was positively

related to math performance. Thus, parents' involvement with their children in educational activities at home facilitated math performance by increasing children's social skills with their peers.

In summary, studies using larger samples with multiple dimensions of social competence are necessary to understand how parent involvement in cognitive activities at home facilitates academic success. Social competence is multifaceted and encompasses both neurological aspects such as the ability to concentrate and stay on task as well as interpersonal components such as the ability to communicate empathically. While these components overlap, understanding how parental cognitive stimulation affects different aspects of social competence is necessary for identifying specific ways that parents impact child outcomes.

*Parenting behaviors and behavior problems.*

*Parental warmth and behavior problems.*

Past research has shown negative associations between parental warmth and child behavior problems. For example, Campbell and von Stauffenberg (2005), as part of a secondary analysis of data from the NICHD Study of Early Child Care, investigated the influence of early child characteristics (behavioral self-regulation at 36 months and 54 months) and family process variables (maternal depression and parenting quality) on behavioral readiness for school (inattention, overactivity, and aggression) at first grade. Data analyses were based on the outcome data at first grade of 1,063 children and families. These results showed that children whose mothers reported fewer symptoms of depression and higher levels of warmth and sensitivity, and who reported that they were more likely to provide guidance when needed, were more behaviorally ready for school.

*Parental discipline and behavior problems.*

More restrictive methods of control, such as power assertive discipline, have also been related to child behavior problems such as impaired self-regulation, aggression, hostility, and attention difficulties (Baumrind, 1971; Petit et al., 1997; Hart et al., 1992; Kochanska, Aksan & Nichols, 2003). On the other hand, Hart et al. (1992) study showed that higher levels of mothers' inductive discipline were associated with more prosocial playground behavior.

Recent evidence of the influence of power assertive discipline on children's behavior comes from a longitudinal study by Kochanska and colleagues (2004). In this study, mothers and children were followed from infancy to age 6. The data included observations in laboratory contexts, interviews with children, and mothers' and teachers' reports. Many of the measures were obtained repeatedly with the following sample sizes reported: 9 months (N=112, 14 months (N=104), 22 months (N=106), 33 months (N=104), 45 months (N = 101), 56 months (N = 74) and 73 months (N = 75). Discipline styles were assessed by observation of mother-child dyads in the laboratory and at home for periods of 2-3 1/2 hour sessions at 14, 22, 33, 45, 56, and 73 months. Child behavior problems (antisocial conduct) were assessed using teachers' and mothers' reports on the Behar Preschool Behavior Questionnaire, which taps externalizing and internalizing behavior problems.

Results showed that higher maternal power assertion toward children aged 14 and 45 months explained a significant (15%) amount of the variance in children's antisocial conduct as rated by mothers and teachers at 76 months. A word of caution relates to the

high attrition rate of this sample between 9 months (N=112) and 56 months (N=74). In addition, generalizability is questionable because the sample was limited mostly to Caucasian families.

A large body of research has investigated links between corporal punishment and subsequent child behavior problems (McCord, 1991; Slade & Wissow, 2004). In the past, psychologists and other professionals have been divided on the question of whether the benefits of corporal punishment might outweigh any potential harm. Some conclude that it is ineffective and contributes to behavior problems (American Academy of Pediatrics, 1998; Gershoff, 2002), whereas others conclude (e.g. Baumrind, 1997; Larzelere, 2002) that corporal punishment is effective and, in some cases, desirable.

Evidence for negative effects of corporal punishment on child behavior problems comes from a large scale meta-analysis of 88 studies by Gershoff (2002). In this study, Gershoff examined both positive (such as compliance) and negative behaviors (such as aggression and antisocial behavior) in children that were associated with corporal punishment. These findings showed ten associations that were negative, such as increased aggression and antisocial behavior, and only one that was positive (immediate compliance on the part of the child).

Recently, researchers at The Johns Hopkins School of Public Health (Slade & Wissow, 2004), utilizing data from the National Longitudinal Survey of Youth, conducted a study to assess whether spanking prior to the age of two was associated with behavior problems four years later after the children had entered school. Participants represented a diverse sample of 1,966 children aged 0 to 23 months at time 1. Spanking was measured using self-reports from the mothers of how many times, if any, in the past

week they had spanked their children. Behavior problems were measured using the Child Behavior Checklist and maternal reports of child behavior problems.

After controlling for several characteristics that confound the importance of corporal punishment as a risk for child behavior problems (e.g., maternal age and marital status, child age and gender, household income), these results showed that spanking frequency before the age of 2 was positively associated with behavior problems at school age. Specifically, white children who were spanked five times in a week had a four times greater risk of behavior problems that required a parent-teacher meeting four years later, and a two times greater risk of behavior problems as reported by mothers. Among African American and Hispanic children, however, spanking was not significantly associated with later child behavior problems. Thus, while the harmful influence of corporal punishment has been shown in white children, the impact of this type of discipline on African American children is not as clear.

In summary, it is clear that the overuse of corporal punishment in severity or frequency can be harmful to children. A word of caution, however, on the interpretation of the findings of the research on spanking and subsequent child behavior problems relates to the measurement of spanking. In a critique of Gershoff's (2002) study, Baumrind, Larzelere, and Cowan (2002) point out that 65% of the studies in Gershoff's review measured overly severe corporal punishment and thus her conclusions made regarding nonabusive spanking cannot be justified. In contrast, the Slade and Wissow (2004) study did not assess severity of corporal punishment. More research is needed to understand the influence of mild corporal punishment on children's behavior problems.

*Parental cognitive stimulation and behavior problems.*

While most of the research has focused on the association between parental cognitive stimulation and children's academic and social outcomes, a number of these studies also include behavior problems as aspects of social outcomes. These studies show that cognitive stimulation reduces the likelihood that children will exhibit behavior problems (e.g., Izzo et al., 1999).

For example, the Izzo et al. (1999) study showed that higher levels of parental home involvement (in children in kindergarten through third grade) were negatively related to child behavior problems three years later. Children whose parents scored lower on cognitive home involvement were more likely to be rated higher on the behavior problems scale of the Teacher-Child Rating Scale which includes behavior problems such as acting out, shy-anxious behavior, and poor work habits.

Hill & Craft's (2003) cross-sectional study of kindergarten children (mentioned previously) examined the impact of parent involvement in cognitive activities at home on child behavior problems. These were assessed using the Authority-Acceptance scale of the Teacher Observation of Classroom Adaptation-Revised /Social Health Profile. Results showed that greater cognitive stimulation was related to lower levels of child behavior problems.

Taken together, a review of the literature at the family level suggests that parental warmth, discipline (inductive versus power assertive), and cognitive stimulation are associated with children's academic achievement. In addition, these parenting behaviors also have an impact on children's social competence and behavior problems. To date, there has been only one study (Hill & Craft, 2003) that examined the role of social

competence as a mediator between these parenting behaviors and academic achievement. This study found that cognitive stimulation from parents of children in kindergarten influenced children's later academic achievement by facilitating children's social competence. The relatively small sample size (n=103) and homogenous population in this study limits the generalizability of these findings, however. Research involving larger sample sizes on more diverse populations needs to be conducted to assess whether parental warmth and discipline influence academic achievement via their impact on social competence.

*School Level: Curriculum*

With research demonstrating the link between improved academic and social outcomes early in school with success later (e.g., Alexander et al., 1993), it is important to understand the role of curriculum in that correlation. Evidence of decreasing academic performance of America's children and demands for effectiveness research in early childhood programs has resulted in a re-examination of the debate between developmental and academic curriculum emphasis fundamental to the preschool years. Given the aforementioned domains, the pendulum has swung even more towards an academic emphasis. This shift has been reflected in the high academic exit requirements in kindergarten and increased kindergarten retention rates (Shepard & Smith, 1986). This trend is especially prevalent in preschool programs serving low income children. This emphasis on academic curricula in the early years (i.e., the pre-kindergarten and kindergarten years) comes in spite of the findings regarding the advantages of a curriculum more focused on developmental issues (e.g., Marcon, 1999; 2002).

Concern over the appropriateness of academic practices for young children has been expressed by early childhood experts (Elkind, 2001; Hirsh-pasek & Golinkoff, 2003). Elkind (2001), for example, has argued that short-term gains produced by overly didactic, formal instructional practices are offset by long-term stifling of children's motivation and self-initiated learning. Others (Marcon, 2002) suggest that the emphasis on academically directed programs (e.g., the outcome of learning takes precedence over the process of learning) and the role of children as passive learners are likely to curtail the development of skills such as curiosity, initiative, independence, and motivation that are crucial for children's later school success.

Brain researchers offer further reasons why academic directed programs may hinder long-term academic success. According to Healy (2004), the use of rote learning tasks in early childhood classrooms compromises higher levels thinking through the impact on brain development. Specifically, concentrating on very specific skills associated with academic directed programs conditions a child to use lower parts of the brain, such as the limbic system and the insufficiently developed cerebral cortex, to learn that skill. Furthermore, Healy (2004) offers neurological evidence that the child will continue to use that part of the brain even when the brain becomes more developed and better suited to the task.

The following section will provide a more detailed description of two curriculum approaches: The academic directed (sometimes referred to as didactic or direct instruction) and the child-initiated (sometimes referred to as developmental or child-centered). This will be followed by an overview of the research to date on the

effectiveness of these different curricular approaches with regard to children's academic and social competence.

*Overview of early Childhood Curriculum Models.*

Differences between these two basic curriculum models (academic directed and child-initiated) for early childhood education can best be understood using Minuchin and Shapiro's (1983) framework. This model provides five theoretical differences as follows: (1) the scope of developmental goals, (2) the conception of how children learn, (3) the amount of autonomy granted to the child, (4) the conception of the teacher's role, and (5) the provision of opportunities to learn from peers.

Academic directed curriculum models, based on didactic approaches to education, place a strong emphasis on the development of intellectual skills versus social skills. Children who participate in an academically directed curriculum are directly taught concepts and academic skills by the teacher. The child learns by responding to the initiating teacher and initiates little. This approach, based on behavioral-learning principles, is highly prescriptive and leaves little room for autonomy by the child. Much of the school day is devoted to practice and drill in reading, language, and math and little room is left for play and interactions with peers. Hence, in contrast to child-initiated models, the child has fewer opportunities to learn from peers. Finally, academic lessons are distinct and not connected.

In contrast, child-initiated programs place a strong emphasis on the development of social skills rather than intellectual skills. Learning experiences are broadly based on constructivist theory and a belief that learning is a self-directed process involving exploratory interaction between children and their environments. This approach provides

more autonomy for the child. Children are not actively taught concepts, but rather learn through self-directed actions facilitated by the instructor. In contrast to the academically oriented programs where the teacher initiates, here the teacher responds to the initiating child. Thus, much of the learning takes place through play and interaction with peers. The curriculum is integrated across disciplines and builds upon the existing knowledge, interest, and experiences of the child.

The following section will review research to date examining the association of these two curricular models (child-initiated and direct-instruction curriculum) and children's academic achievement, social competence, and behavior problems.

*Early childhood curriculum type and academic achievement.*

When using traditional measures of achievement such as report card grades or achievement tests, studies comparing the academic effectiveness of child-initiated and academic directed programs show somewhat mixed results. Hyson, Hirsch-Pasek, and Rescorla (1990), for example, showed that type of curriculum did not result in significant academic achievement differences between the two models. Rescorla et. al. (1991), in another study examining the long-term effects of a highly structured (academic directed) curriculum, found no advantage in overall cognitive abilities between preschool and the first grade.

Stipek, Feiler, Daniels, Milburn (1995), assessed the effects of two differential instruction approaches, academic directed and child-initiated, in a sample of 227 four-to-six-year-old pre-kindergarten and kindergarten children from low-income, minority, and middle class family backgrounds over the course of one year. Curriculum type was assessed in an experimental setting using 3 observation tools: The Early Childhood

Instructional Program measure (Stipek, Galluzzo & Milburn, 1992), the Early Childhood Environment Rating Scale (ECRS), and the Classroom Practices Inventory Observations (CPI). These curriculum assessments were based on 2-3 hours of classroom observation. Academic achievement (children's number and letter/reading skills) was assessed using the Woodcock-Johnson Achievement Test, and the Peabody Individual Achievement Test (PIAT).

Results showed few overall differences between these two groups of children on academic measures. However, children from the more child-centered programs scored higher on numbers/math achievement tests but lower on standardized tests of letters/reading achievement than children from the basic skills-oriented programs.

Several limitations associated with this study should be noted. First of all, this study did not include measures in the beginning of the year, and therefore could not control for existing differences between these groups. In addition, the scope of the outcomes for academic achievement was limited strictly to basic academic scores. Proponents of child-initiated approaches place emphasis on broader cognitive goals such as creativity and problem solving abilities.

Studies assessing cognitive development and academic achievement using multiple measures of academic performance present a broader picture of the impact of curriculum. For example, in the Rescorla et al. (1991) study, while no significant differences were found between curriculum models on traditional academic measures, several differences were found on measures assessing other aspects of development relevant to academic achievement. Results on these measures showed that children in the more academic preschools thought less creatively and had less positive attitudes towards

school at the end of kindergarten than children in the more child-initiated preschool environments.

School success in the later grades is more likely to draw upon academic skills emphasizing reading comprehension vs. the act of reading and social skills emphasizing independent initiative, responsibility, and task persistence (Marcon, 2002). Thus, understanding the effect of curriculum on cognitive development requires multiple measures of cognitive development that tap constructs such as creativity, problem solving, and critical reasoning.

Stipek and colleagues (Stipek et al., 1998), as an extension of their earlier work (Stipek et al., 1995), compared the cognitive competencies of 228 preschoolers and kindergarten children from classrooms classified as either emphasizing basic skills in a less positive social classroom climate or de-emphasizing basic skills in a more positive social climate. This study included broad assessments of cognitive competencies over a longer period of time (at the beginning and end of the year and then again at the end of the next year). In addition to the cognitive measures used in the 1995 analysis, six additional scales from the McCarthy test were included. Program approaches were assessed using the same three observation tools used earlier (Stipek et al., 1995).

As found in the previous study, results showed that children from academic directed programs scored higher than children from the child-centered programs on measures of basic academic skills. On the other hand, children from the child-centered programs scored higher on measures assessing problem solving, language skills, and conceptual grouping than children from the basic-skills programs. Possible explanations for these results could be due to differences in the teachers' interaction styles associated

with both models. Specifically, teachers from the academic directed programs were rated as less nurturing and less responsive to the children than those teachers from the child-initiated programs. In addition, teachers in the academic directed programs used more negative discipline strategies (yelling and negative feedback) and provided children with fewer choices than those programs which were child-centered.

Marcon (1999), in a sample of 721 four-year-olds who had been randomly selected (not randomly assigned) from 65 classrooms in an inner-city school system, assessed the differential affects of preschool models (e.g., child-initiated and academically directed). Children were assessed at the end of a prekindergarten or Head Start experience on various measures of academic achievement. Early childhood progress reports were used to assess cognitive skills including math (number and science skills) and verbal (letter recognition, listening skills, and comprehension). The Pre-K Survey of Beliefs and Practices was developed as a tool for this study to identify preschool models according to the five theoretical dimensions delineated by Minuchin and Shapiro (1983). The survey was completed by 193 out of 206 prekindergarten and Head Start teachers in 123 free public schools or centers in the District of Columbia Public Schools (DCPS).

Results on academic measures indicated significantly higher scores for children from child-initiated programs in every subject area when compared to those for children from academically directed programs. While the results clearly favored the child-initiated programs, there are limitations to this study. The correlational design, lack of random assignment, and absence of pretest data should be considered when interpreting

these findings. Furthermore, generalizability of these findings is limited due to the demographic similarity of the children represented (low-income inner-city population).

More recent evidence (Marcon, 2002) in support of long-term benefits of a child-initiated curriculum comes from a follow-up of Marcon's (1999) study. This longitudinal study was conducted to examine the influence of preschool models for children at age 4 on their school success six years later. The sample was predominantly African American (93%), low-income (75% qualifying for school lunch), and demographically from single-parent (73%) families. School success was assessed using report card grades, retention rates, and special education placement of 160 children at the end of their fifth year and 183 children at the end of their sixth year in school. Of particular interest were the children's school outcomes following their transition from primary (year 5) to middle school (year 6), when school demands are likely to change. As mentioned previously, school success in the later grades is more likely to draw upon academic skills emphasizing comprehension vs. the act of reading and social skills emphasizing independent initiative, responsibility, and task persistence (Marcon, 2002).

These results showed that children's grades from child-initiated programs, despite the academic demands in the later elementary grades, held constant or improved in all but two subject areas (music and social studies). The overall grades of these children from the academically directed programs, in contrast, declined in all subject areas with the exception of handwriting.

There were several limitations associated with the results in this study. First of all, given the correlational design of the quasi-experimental study, other variables between preschool and fourth grade were also likely to contribute to the results. For

example, the influence of other family characteristics in this predominantly African American population (e.g. parenting beliefs and attitudes) could have contributed to some of the outcomes measured. This sample also differed from the original (Marcon, 1999) sample in that it included mostly low-income minority families from single–parent households. High attrition was another limitation associated with this analysis.

One large scale study by Henry, Ponder, Rickman, Maskburn, Henderson, and Gordon (2004) examined the effects of teaching styles and curricula on children's cognitive development at the end of kindergarten. These analyses were based on the outcomes of a sample of 326 children who attended Georgia's Pre-K program drawn from the Early Childhood Study (Henry, Gordon, Henderson & Ponder, 2003). Children's cognitive development (language, literacy, and math) was assessed using the Woodcock Johnson Test of Achievement, the Peabody Picture Vocabulary Test, and the Comprehensive Test of Phonological Processing. The Pre-K Survey of Beliefs and Practices was used to assess curricular approach.

After controlling for language and problem solving skills as well as for child and family characteristics, the results of this study showed that curricula focusing on child-centered beliefs and practices were associated with more positive academic outcomes for children at the end of kindergarten. Specifically, the children who had adult-directed teachers in Pre-K were rated as having lower math, language, and literacy scores than children having more child-centered teachers in Pre-K.

*Early childhood curriculum type and social competence.*

Numerous studies (Hart, DeWolf & Burnts, 1993; Hyson et al., 1990; Burts, Hart. Craig H., Charlesworth & Lirk, 1990; Stipek et al., 1998) examining the impact of

curriculum on social-emotional development support the use of child-initiated programs for promoting social skills. Findings from these investigations demonstrate that children enrolled in academic directed programs, when compared to those children enrolled in more child-initiated programs, experience higher levels of stress, lower levels of motivation, and less positive social behaviors.

For example, in Stipek et. al.'s (1995) study assessing differential curriculum approaches on four to six-year old children, social competence (e.g., motivation) was assessed in an experimental setting and through classroom observation. These results showed that children in the basic-skills oriented program rated their abilities and expectations for academic success lower than children from the more child-centered programs. These children showed more dependency on adults for permission and approval, less pride on their academic accomplishments, higher levels of reported anxiety, and lower levels of motivation (perceptions of ability, expectations for success, enjoyment of school and school-like activities, preference for basic skills tasks, preference for challenge, anxiety, pride, dependence) when compared to children in the basic skills programs.

In their follow-up study, Stipek and colleagues (1998) included motivation and affect outcomes in addition to academic achievement. They examined the differential effects of child-initiated and academic directed programs on children's motivation and affect. Motivation and affect were assessed in an experimental setting and through classroom observation, and included perceptions of competence, attitudes towards school, anxiety, affect, risk taking, expectations for success, independence, and persistence.

Program approaches were assessed using the same three observation tools used in the earlier (Stipek et al., 1995) study.

Results on motivation measures showed that children from the structured, teacher directed programs emphasizing basic skills expressed more negative affect, had a less positive attitude towards school, and were more dependent, less compliant, and more likely to get into trouble than those children from child-initiated classrooms. On the other hand, those children from the basic skills orientation displayed higher levels of motivation to complete more difficult tasks, greater preference for challenge, and greater task persistence than their child-initiated counterparts. Surprisingly, children from the more basic skills oriented classrooms were more likely be seen engaging in prosocial acts toward their peers.

Marcon's (1999) study also examined the effects of kindergarten curriculum models on social development outcomes. These outcomes were assessed using teacher ratings of social competence and academic achievement. Socialization skills, including interpersonal and coping skills, were assessed using the Vineland Adaptive Behavior Scales, a teacher report inventory. Other social skills, including work habits (task persistence, asks for help when needed) and social competence (shares and takes turns, responsibility), were assessed through examinations of early childhood progress reports. All social assessments were made at one time (at the end of the school year).

Results showed that after controlling for economic differences between the two curriculum groups, children from child-initiated programs demonstrated more communication skills (expressive and receptive language), greater social skills, and better work habits than children from academic directed programs.

Other evidence of social-emotional benefits of child-initiated approaches to learning comes from the work of DeVires, Reese-Learned, & Morgan (1991). These researchers examined differences between children's socio-moral and reasoning in three kindergarten classes – one used Direct Instruction, another used a child-initiated approach, and the third was eclectic.

Higher moral action and reasoning (as indicated by greater negotiation strategies and shared experiences in group activities) was found in those children whose kindergarten teachers used a constructivist approach to learning. DeVires et al.'s explanation for these results was that lessons about social relationships are communicated by teachers through the manner in which they provide information to children. In this case, the unilateral provision of information characteristic of didactic classrooms was believed to undermine social reasoning skills that are necessary for children's development of social and moral competence. Conclusions from these results were that the time and effort spent on academic instruction cannot be justified in light of the possible negative consequences for social-emotional development and that similar positive effects on academic achievement have been shown in programs using a more child-initiated focus (e.g., Stipek et al. 1995).

Further evidence of the benefits of child-initiated curricula on social competence comes from the large scale study by Henry et al. (2004), which examined the effects of teaching styles and curricula on children's social development at the end of kindergarten. Social development was assessed using teachers' reports, including social skills in the classroom (e.g., task persistence, curiosity, ethical behavior, refusal skills, and respect for authority) and attitudes towards learning.

These results showed that children who had child-centered teachers in early learning environments had significantly more positive attitudes towards school and learning as well as use of social skills in the classroom than those children in adult-directed classes even after controlling for family characteristics. These interpretations should be interpreted with caution, however, as none of these social skills were assessed at the beginning of the study.

*Early childhood curriculum type and behavior problems.*

Research indicates that child behavior problems are more likely to occur in child learning environments that implement academic directed programs. For example, Henry and colleagues (2004) found that pre-kindergarten children from academic directed classrooms were rated as having more child behavior problems (withdrawn and aggressive behaviors) than children from more child-centered classrooms in Pre-K. It is important to note that these child behaviors were not assessed at the beginning of the study.

Hart, Charlesworth, Burts & DeWolf (1993) showed that children from teacher centered kindergarten curricula, when compared to children from more child-centered programs, were more likely to engage in negative behaviors (conduct and willingness to follow directions) and to have more attention (distractibility) problems.

Compelling longitudinal evidence comes from a study by Schweinhart & Weikart (1997). Weikart and his colleagues began this study in 1967 to examine the differential effects of three preschool curriculum models (High/Scope, Direct Instruction, and traditional Nursery School) on a sample 68 children living in poverty in Ypsilanti, Michigan. These children were randomly assigned to one of the three curriculum

models, which they experienced for one or two years at ages 3 and 4. In this case, the High/Scope curriculum model represented the child-initiated model. Results through age 10 (Weikart, Epstein, Schweinhart & Bond, 1978) showed no significant intellectual or academic differences in the children in the groups examined.

When the study expanded to include community behavior, several differences emerged in these program groups at age 15 (Schweinhart, Weikart & Larner, 1986) and again at age 23 (Schweinhart & Weikart, 1997). In the 15-year follow-up, the Direct Instruction group reported committing 2 ½ times as many acts of misconduct as the High/Scope group. At age 23, the curriculum groups differed significantly on both positive and negative community activities. Specifically, examinations of both school and arrest records indicated that the Direct Instruction group had three times as many felony arrests per person. In addition, the children from the Direct Instruction group were treated almost 8 times more than the High/Scope group for emotional impairment or disturbances. Finally, significantly more children from the High/Scope group reported doing volunteer work. It is important to note that the homogeneity and small sample size used in this study limits the generalizability of these findings.

More research is needed to determine the effects of these approaches on children's long-term academic and social outcomes. It might be that the more prosocial behaviors exhibited in the basic-skills classrooms were due to the more stringent classroom demands in these settings. Research examining children's social behaviors outside of these classrooms would yield better understanding of these results.

According to the literature pertaining to the association between curriculum and academic achievement and curriculum and social competence, although academic

directed programs sometimes result in higher levels of academic achievement, this achievement may come at a social/emotional cost to the child. The benefits of highly didactic and overly structured approaches to pedagogy seem to be limited, particularly over the long term. Given that similar cognitive advantages also occur in child-initiated environments, it would seem beneficial to understand how academic achievement is enhanced through this curriculum approach.

*Control Variables*

The following section identifies variables that may be linked to both achievement and to parenting and curriculum in order to make sure that the effects of parenting and curriculum are not spurious. The following variables were controlled in all analyses.

*Child variables.*

*Gender.*

Sex differences in academic achievement during early childhood have been shown to favor girls (Richardson, Koller & Katz, 1986; Henry et al., 2004; Marcon, 2002). Studies have shown that girls outperform boys academically in pre-kindergarten (Marcon, 1999), kindergarten (Henry et al., 2004), first grade (Reynolds, 1989), and through the elementary school years (Pollard, 1993). Evidence (Marcon, 2002) suggests that boys, especially African Americans, whose preschool experiences are active and child-initiated, fare better than boys whose experiences are more academically directed. According to Marcon (2002), "The passivity required of children in overly academic directed programs may be especially difficult for African American boy (and boys in general). In the preschool years, girls' early maturation may allow them to better process the verbal instruction typical of didactic, academically directed instruction,

whereas boys' generally slower rate of neurological rate of development may require a more active, 'hands on' approach found in non-didactic, child-initiated early learning experiences" (p. 18).

*Age.*

Younger age at school entry has been associated with poor academic and social outcomes (Flower & Cross, 1986; Jones, 1990). Age also must be controlled to adjust for maturational differences among children in the same grade.

*Cognitive ability.*

Cognitive ability, or IQ, accounts for a large portion of the variance in academic achievement (Plomin, 1995). Many studies indicate that cognitive disabilities place children at risk for poor academic achievement (Brier 1995; Fazio et al. 1996). Fazio & Naremore & Connell (1996), for example, showed that language impairment of children living in poverty leads to poor academic performance and language problems in childhood. Fowler, Schwartz, & Atwater (1991) suggest that children with cognitive disabilities lack the skills (independence and survival) necessary for successful academic achievement in elementary school.

*Family background variables.*

Examining risk associated with family background characteristics, data suggest that low income, low maternal educational level, maternal depression, single parenthood, and minority status have a negative impact on child outcomes, including social competence and academic achievement (Flower & Cross, 1986; Guidubaldi & Perry, 1984; Sinclair & Murray, 1998). Such factors have been tied to increased risk of school

failure (James, 1997), lower academic achievement in the first two years of school (Alexander & Entwisle, 1988), and social-emotional disadvantage (McLoyd, 1998).

*Family structure.*

Evidence suggests that children from single parent households do less well in school than their counterparts from two-parent households (Guidubaldi & Perry, 1984).

*Ethnicity.*

Studies show that minority status is a risk factor for poor academic achievement. Studies show that African American children score significantly lower on math and reading tests in first grade than do Euro-Americans even after income levels are controlled (Stevenson, Chen & Uttal, 1990).

*Household income.*

Research shows that poverty places children at risk for academic and social maladjustment. Lower income children often perform less well in school than their higher income counterparts (Edelman, 1987; Petit et al., 1997).

*Maternal education.*

Lower levels of maternal education have been shown to predict poor math and reading achievement in the early grades (Flower & Cross, 1986). A higher level of maternal education (Jackson & Frick, 1998; Byrd & Weitzman, 1994), on the other hand, has been shown to be a protective factor.

*Maternal depression.*

Research has demonstrated an association between maternal depression and children's cognitive and social outcomes. Specifically, maternal depression is considered a risk factor for poor social and academic competence in children (Hammen, 2002).

*School related characteristic.*

*Half or full day kindergarten program.*

Length of the kindergarten day has been shown to influence children's academic achievement. Children who have had a full-day of kindergarten may be better prepared than their half-day peers.

*Purpose of Study*

This dissertation will examine the factors within the ecological system of kindergarten children that determine children's social competence and academic achievement in the third grade. After controlling for individual and family background factors, family and school levels will all be examined (Figure 1). The proposed dissertation has three objectives: 1) to understand how parenting and curriculum impact academic achievement, 2) to understand how early social competence is linked to later cognitive achievement, and 3) to ascertain whether social competence mediates the relationship between the proposed parenting and curriculum variables and later academic achievement

*Definitions*

The following are definitions of concepts used in the current research.

Independent variables

Parenting Behaviors:

Warmth: the parent's demonstrative interaction, physical affection, and time spent in positive discussion with child (Peterson & Zill, 1986).

Discipline:

Inductive Discipline: Behaviors that guide children's behaviors by introducing limits and setting up logical consequences and then explaining rationales that support them (Burleson, 1983).

Spanking: The use of physical force with the intention of causing physical pain, but not injury, for purposes of correction and control (Straus, 2001).

Cognitive stimulation: refers to the parental factors that promote children's learning and understanding of the world around them as well as greater achievement in school.

Curriculum (Marcon, 1999):

Child-Initiated: Classroom models characterized by high levels of play and autonomy compared with those characterized by low levels of play and autonomy.

Dependent Variables

Social Competence (Gresham & Elliott, 1990; Meisels, 1994): Those skills and behaviors that lead to positive social outcomes and avoidance of socially unacceptable responses.

Learning-related Skills: The approaches-to-learning and the self-control subscales make up the learning related social skills measure. These skills include behaviors relating to attention, independence, self-regulation, cooperation, organization, and listening and following directions (McClelland & Morrison, 2003). This construct was based on the combination of the approaches to learning scale and the self-control scale.

*Approaches to Learning*: Child skills that affect the child's ability to benefit from the learning environment including the child's attentiveness, task persistence, eagerness to learn, and learning independence.

*Self-control:* The child's skills in responding appropriately when teased, controlling temper, and responding in a non-violent way when pushed.

Interpersonal Skills: The child's skill in forming and maintaining friendships including the ability to get along with people who are different, comfort other children, express emotions and opinions in positive ways, and show empathy to other children.

Child Behavior Problems: are externalizing or internalizing behaviors that are disruptive to the child and/or family. Externalizing behavior problems include verbal and physical aggression towards others, impulsivity, poor control of anger, and defiance. Internalizing problem behaviors include problems of overcontrol such as indicated by symptoms of anxiety, sadness, and social withdrawal.

Academic Achievement

Language and Literacy Achievement: The child's skills in language and literacy including proficiency in speaking, listening, reading, and writing.

Mathematics Achievement: The child's math skills including concepts of numbers, solving number problems, use of math strategies, data analysis, and measurement.

*Hypotheses*

On the basis of prior research, it is expected that the existence of positive parenting practices at home and a child-initiated curriculum in kindergarten foster social

competence in third grade, as measured by higher learning-related social skills, more positive social interactions with peers, and fewer behavior problems. It is also expected that social competence and behavior problems in third grade mediate the association between parenting practices in kindergarten and academic achievement in third grade, and social competence and behavior problems mediate the association between type of curriculum in kindergarten and academic achievement in third grade. Specifically, warmth, inductive discipline, absence of spanking, cognitive stimulation, and a child-initiated curriculum in kindergarten foster academic achievement in third grade indirectly through their effect on social competence. This study has seven direct hypotheses and two mediating hypotheses. After controlling for the age, cognitive performance in kindergarten, cognitive disability, gender, maternal education, maternal depression, household income, race-ethnicity, family structure, and length of kindergarten day, it is expected that:

*Parenting and academic achievement*

1. More positive parenting behaviors (e.g., warmth, inductive discipline, the absence of spanking, and cognitive stimulation) toward children in kindergarten will each be associated with higher levels of academic achievement in third grade.

*Parenting and social competence/learning-related and interpersonal skills*

2. More positive parenting behaviors (e.g., warmth, inductive discipline, the absence of spanking, and cognitive stimulation) will each be associated with higher levels of third graders' social competence.

*Parenting and social competence/behavior problems*

3. More positive parenting behaviors (e.g., warmth, inductive discipline, the absence of spanking, and cognitive stimulation) toward children in kindergarten will each be associated with lower levels of behavior problems in third grade.

*Curriculum and academic achievement*

4. A child-initiated curriculum in kindergarten will be associated with higher levels of academic achievement in third grade than an academic directed curriculum.

*Curriculum and social competence/Learning-related and interpersonal skills*

5. A child-initiated curriculum in kindergarten will be associated with higher social competence in third grade than an academic directed curriculum.

*Curriculum and social competence/behavior problems*

6. A child-initiated curriculum in kindergarten will be associated with lower child behavior problems in third grade than an academic directed curriculum.

*Social competence and academic achievement*

7. Social competence and behavior problems in third grade will be associated with higher levels of academic achievement in third grade.

a) Higher levels of social competence in third grade will be associated with higher levels of academic achievement in third grade.

b) Lower levels of behavior problems in third grade will be associated with higher levels of academic achievement in third grade.

*Mediation hypotheses*

8. Social competence and behavior problems in third grade will mediate the association between parenting in kindergarten and academic achievement in third grade.

When social competence in third grade is added into the regression of academic achievement in third grade onto parenting and curriculum in kindergarten, the effects of parenting will be significantly reduced.

a) When interpersonal skills and behavior problems in third grade are added into the regression of academic achievement in third grade onto parenting and curriculum in kindergarten, the effects of parenting in kindergarten will be significantly reduced.

b) When learning-related skills and behavior problems in third grade are added into the regression of academic achievement in third grade onto parenting and curriculum in kindergarten, the effects of parenting in kindergarten will be significantly reduced.

c) When behavior problems in third grade are added into the regression of academic achievement in third grade onto parenting and curriculum in kindergarten, the effects of parenting in kindergarten will be significantly reduced.

9. Social competence in third grade will mediate the association between curriculum in kindergarten and academic achievement in third grade. When social competence in third grade is added into the regression of academic achievement in third grade onto curriculum and parenting in kindergarten, the effects of curriculum will be significantly reduced.

a) When interpersonal skills and behavior problems in third grade are added into the regression of academic achievement in third grade onto parenting and curriculum in kindergarten, the effects of curriculum will be significantly reduced.

b) When learning-related skills and behavior problems in third grade are added into the regression of academic achievement in third grade onto parenting and curriculum in kindergarten, the effects of curriculum will be significantly reduced.

c) When behavior problems in third grade are added into the regression of academic achievement in third grade onto parenting and curriculum in kindergarten, the effects of curriculum will be significantly reduced.

# Chapter 3: Method

## *Participants*

As stated previously, this study is a secondary analysis of data from a larger, six-year study entitled The Early Childhood Longitudinal Study - Kindergarten cohort (ECLS-K), which is sponsored by the National Center for Education Statistics (NCES) (U.S. Department of Education, National Center for Education Statistics, 2005a). The ECLS-K is designed to focus on the educational experiences of minority and majority, disadvantaged, and advantaged children alike. The ECLS-K selected a nationally representative sample of 22,000 children enrolled in about 1,000 kindergartens, both private and public, offering half-day and full-day programs. Children from different racial-ethnic and socioeconomic backgrounds as well as an oversample of Asian children were included. Base-year data were collected in the kindergarten year, in the fall of 1998 and spring of 1999 (rounds 1 and 2), with additional follow-up data collections in the spring and fall of the first grade (rounds 3 and 4), and spring of third grade (round 5) and fifth grade (round 6). This dissertation will focus only upon kindergarten and third grade data, because the fifth grade data were not available at the start of this project.

Sample attrition due to nonresponse and change in eligibility status is expected in longitudinal studies. In the case of the ECLS-K, the number of children who participated in the base year and first grade and third grade data collections is 13,698 (10,900 in original public schools and 2,798 in original private schools), representing 64 percent of the base year respondents or 60% of children sampled for the base year. To adjust for this attrition and to represent the national population of children, longitudinal weights

calculated by the National Center for Education Statistics (NCES) were used (U.S. Department of Education, National Center for Education Statistics, 2005a).

*Procedure*

In the fall of 1998, data were collected from parents and teachers using a variety of formats including computer-assisted telephone interviews (CATI), one-on-one assessments, and self-administered paper and pencil questionnaires. While most of the fall instruments were repeated in the spring of 1999, parent and teacher measures varied by content to ease respondent burden. Individual, family, and school control variables, presented in Appendix A, elicited information about child characteristics (age, gender, cognitive skills), family characteristics (maternal education, maternal depression, family structure, household income, race/ethnicity) and school characteristics (half vs. full-day kindergarten, curriculum).

*Constructs and Measures*

Constructs and associated measures include:

1. Parenting Behaviors (Appendix B)
2. Curriculum (Appendix C)
3. Social Competence (not available for public use. See U.S. Department of Education, National Center for Education Statistics, 2005b)
4. Academic Achievement (Appendix D)

*Independent Variables*

*Parenting behaviors.*

*Warmth*.

Parental warmth was assessed in the parent interview at the kindergarten wave using a 13-item scale shown in Appendix B. Caregivers were asked to respond to 13 statements such as "(child's name) and I often have warm, close times together" and "I often feel angry with (child's name)". These items are ranked on a continuum ranging from 1 - completely true to 4 - not true at all; caregivers indicated the extent to which each item was similar to their own feelings/behaviors. Items used for scoring and the direction coded were 1 (reversed), 2 (reversed), 3, 4 (reversed), 5, 6 (reversed), 7, 8, 9, 10, 11, 12, and 13. A total possible score was created by summing over these 13 items. Total possible scores ranged from 13 to 52, with higher scores indicating higher levels of parental warmth.

*Discipline*.

Two discipline variables were computed (spanking and inductive discipline). The first discipline variable (inductive discipline) was created by dichotomizing scores from an 11-item scale that was used to assess the mother's use of inductive discipline. Mothers were asked to indicate the types of strategies they might use (hypothetical) if their child hit them. If parents answered yes to either item 1, 3, 5 or 11 they were rated as power assertive. For example, a "yes " response to any of the following statements was rated as power assertive: "If my child got so angry that he/she hit me, I would…spank, him him/her back, make fun of him/her, yell at him/her or threaten him/her.. . " In order for the overall score on these items to be rated as inductive discipline, items 1, 3, 7, and 11 had to be answered as a "no". To be considered as inductive discipline, these mothers had to meet two other criteria. The first was to answer yes to any of the items stating that

they would respond by giving them a consequence. Items 2, 5, 6, 8, 9, and 10 were considered appropriate consequences. For example, these items stated "If my child got so angry that he/she hit me, I would…have him/her take a time out…take away a privilege". The second was that they had to answer yes to the item 4 which indicated that they would talk to their child about what they had done wrong.

The second discipline variable (spanking) was based on the actual number of times the mother had spanked her child in the past week. Mothers were asked how many times, if any, in the past week they had spanked their child. Because the majority (75.1%) of mothers reported not spanking their child at all within the past week, this variable was dichotomized into those who spank (=1) and those who do not (=0).

*Cognitive stimulation*.

Cognitive stimulation, another parenting behavior, was assessed using a four-item scale on the home environment, activities, and cognitive stimulation section of the parental inventory. This scale, presented in Appendix C, asked parents to respond to statements describing how often they participated in a variety of educational activities with their children, such as reading telling stories, and playing games or puzzles. These items are also ranked on a continuum ranging from #1 - not at all to #4 - every day. Items used for scoring were 1, 2, 3, and 4. Total scores were summed, with total scores ranging from 4 to 16. On this scale, higher scores indicated higher levels of cognitive stimulation.

*Curriculum*.

Only one characteristics related to curriculum type was assessed in the ECLS-K, time spent in child-initiated activities. Thus, type of curriculum in kindergarten was

assessed using one item from the teacher questionnaire, presented in Appendix C. This item was used to assess the time in child-initiated activities in the classroom and included questions such as, "In a typical day, how much time do the children spend in child-selected activities?" Teachers rank the amount of time they spend on this activity on a continuum ranging from #1 (no time) to #5 (three hours or more). Total possible scores were ranked on a continuum ranging from #1 - no time to #5 - three hours or more, with higher scores indicating more time spend in child-initiated activities. This question has been used in past research to measure child-initiated activities (e.g., Marcon, 1999).

### *Dependent Variables*

*Social competence.*

Children's social competence was assessed by a teacher report in the third grade using the Social Rating Scale (SRS) (U.S. Department of Education, National Center for Education Statistics, 2005a) a measure adapted from the Social Skills Rating System (Gresham & Elliott, 1990) that assesses children's social skills and behavior problems. The items in the teacher report form are adapted to the school environment and are, therefore, relevant for this study (U.S. Department of Education, 2002). Social competence in this study was based on the sum of the learning-related score and the interpersonal skills score. The specific items on the Social Skills Rating System are copyright protected and, unfortunately, not available for public examination. As part of a self-administered questionnaire, third grade teachers were asked to judge how often students exhibited certain social skills and behaviors. The Teacher Report Form for the preschool child version, which consists of a total of 24 items, was used in this study.

Teachers used a frequency scale to report how often the preschool child exhibited the behavior on a continuous scale ranging scale from #1 (never) to #4 (very often).

Learning-related social skills were assessed using two of the five SRS subscales: Approaches–to-learning (U.S. Department of Education, National Center for Education Statistics, 2005a) and self-control (U.S. Department of Education, National Center for Education Statistics, 2005a). A total learning-related score was assessed by summing the averages of the total scores on these two scales. Interpersonal social skills were measured using the average score on the 5-item interpersonal skills scale.

*Learning-related skills*.

A learning-related skills score was assessed by teacher report on the approaches-to-learning scale and the self-control subscale. Scores on the approaches-to-learning subscale items were summed and then averaged. These scores were added to the scores on the self-control scale items that had also been summed and then averaged. Total scores (based on these 10 items) ranged from 2 to 8 with higher scores indicating higher levels of learning-related skills. The SRS approaches-to-learning subscale includes six items that rate how often a child shows eagerness to learn, interest in a variety of things, persistence, responsibility and concentration. The self-control scale includes four items on control of attention as well as control of emotions and behavior in interactions (e.g., frequency with which a child argues, fights, or throws tantrums). The total score for self-control were summed and then averaged. The total possible score ranged from 1 to 4.

*Interpersonal skills*.

Interpersonal social skills were assessed by teacher report using the social interaction subscale, which includes behaviors that assess children's interactions with peers and

adults. It includes five items that address children's ability to form and maintain friendships, get along with people who are different, comfort or help others, express feelings and emotions in constructive ways, and show sensitivity to the feelings of others. Scores on these five items were summed and then averaged. Total possible scores ranged from 1 to 4, with higher scores indicating higher levels of interpersonal skills.

*Behavior problems*.

Behavior problems were assessed by teacher report. The two SRS behavior problems subscales assess behaviors shown to interfere with the learning process and the child's ability to interact positively with peers. The five-item externalizing subscale assesses the frequency with which a child argues, fights, acts impulsively, gets angry, and disturbs classroom activities. The scores on these items were summed and then averaged. Total averaged scores ranged from 1 to 4, with higher scores indicating higher levels of externalizing behaviors. The internalizing subscale consists of four items that assess the presence of anxiety, loneliness, low self-esteem, and sadness. Total scores for this subscale were summed, and then averaged. Total scores for behavior problems were based on the sum of the average of the scales so that the internalizing and externalizing scales have equal weight. Possible scores ranged from 1 to 4, with lower scores being optimal and indicating fewer internalizing behavior problems. Given the relatively small number of items on both of these scales, total behavior problem scores were based on the sum of the average score on both the internalizing and externalizing scales. Total possible scores ranged from 2 to 8, with lower scores being optimal and indicating fewer behavior problems.

The SSRS teacher form has been found to be a reliable instrument with internal consistency coefficients and test-retest correlations ranging from .82 to .95. The SSRS instrument has also been found to have both criterion and construct validity (Elliott, Gresham, Freeman, & McCloskey, 1988). For example, evidence showed that the SSRS correlated significantly with other measures including the Social Behaviors Assessment (Stephens, 1978) and various forms of the Child Behavior Checklist (Achenbach & Edelbrock, 1983). Studies evaluating the construct validity of this measure have included internal consistency, correlations with other tests, convergent and discriminate correlational analyses, and developmental changes.

For the current study, the split-half reliability for the teachers on the SRS was assessed. These reliability scores ranged from .76-.91 (U.S. Department of Education, 2005), which are considered high.

*Academic achievement.*

Academic achievement was assessed in the third grade using two sections of the Academic Rating Scale (ARS): Language and Literacy, and Mathematics. The ARS was designed specifically for the ECLS-K to measure teacher's evaluations of students' academic achievement. Criteria for selecting and creating items for the ARS are relevant for this study. For example, knowledge skills, and behaviors reflecting the most recent state and National standards, variables identified in the literature as associated with later academic achievement, items relevant to a diverse sample of students, and items that reflect developmental change across time were some of the criteria used in the creation of the ARS (U.S. Department of Education , 2005b).

The ARS, presented in Appendix D, includes items designed to measure both process and products of children's learning in school. Using a Likert format, teachers are asked to rate each child compared with other children of the same age level. Options range from 1 ("not yet") to 5 ("proficient"). The language and literacy section of the ARS asks teachers to rate the child's proficiency in speaking, listening, early reading, and writing. In the Mathematics section, teachers rate each child on one item on the following five skills: concepts of numbers, solving number problems, use of math strategies, data analysis, and measurement. The combined score for math and literacy was used as the control in kindergarten, as well as a dependent variable in third grade. The combined scores were used because separate analyses of math scores and literacy scores showed similar results.

A background review of the literature on the reliability and validity of teachers' judgments of academic performance shows teachers' judgments to be both reliable and valid assessments of children's academic performance (Meisels & Perry, 1996). Correlations between their judgments and more standardized, objective measures of achievement have been as high as .80 and .90. Some researchers have even found teachers' judgments to be better predictors of students' later performance than standardized measures (Meisels, Atkins-Burnett & Nicholson, 1995).

*Sample Design*

Standard errors were adjusted for the complex sample design using AM software. Weights computed by the NCES were used to adjust to the distribution in the population and to adjust for missing data.

*Missing Data*

The full ECLS-K base-year sample is composed of 22,782 children and their families. In the third grade, 17,401 children remained. However, weights calculated by the NCES adjusted for this attrition (U.S. Department of Education, National Center for Education Statistics, 2005a).

Sample size for the current study was maximized through careful choice of control variables. If items were missing on the main variables, the case was eliminated. Thus, cases with missing data were excluded from the analysis. Variables such as teacher characteristics could not be included because of the large amount of missing data. The social competence and academic achievement variables had the most missing data, but were key variables in the analysis. For example, the total number of cases on the social competence variable was 11,371 and only 10,811 cases had complete data on the academic achievement variables. The sample with complete cases on all of the main variables consisted of 7,146 children. The sample that was left after elimination of cases with missing items was compared to the full sample that was present in the third grade. Post-hoc analyses of the total third grade sample ($n$=17,401) and the remaining sample ($n$=7,146) were conducted. Differences were found on income and race/ethnicity. Analysis of missing items showed that children in the analysis sample had higher family incomes and were more likely to be white than the children with the missing data. These variables are controlled in all analyses.

*Statistics*

*Descriptive analysis.*

The present study utilized data from the kindergarten and third grade year of the Early Childhood Longitudinal Study – Kindergarten Cohort (ECLS-K). Data on the children's academic achievement, social competence, behavior problems, maternal parenting practices, and kindergarten curriculum model were obtained for the analysis. A separate data file with no identifying information except the participant's code number was created for statistical analysis with the SPSS 14.0 program.

Descriptive statistics such as means and standard deviations were calculated to summarize the demographic information on children and their families, using the SPSS 14.0 statistical package. The demographic variables of the child that were analyzed include age in months at kindergarten entry, gender, race, cognitive performance in kindergarten, and presence of a learning disability. Demographic variables pertaining to the children's families included maternal education, maternal depression, family structure, and family household income. Length of kindergarten day (1/2 versus full) was also analyzed. Pearson's Product Moment correlation coefficients were computed to examine the relationships among all the variables.

*Multiple regression analysis.*

Multiple regression is the method of choice for examining the relative strength of the independent variables (parenting practices, type of curriculum, and control variables, including age of the child in months, maternal education, maternal depression, income, and race/ethnicity) in predicting the dependent variables (child's social competence and academic achievement). Separate multiple regressions were used to test each of the individual hypotheses. In multiple regression, independent variables were entered to analyze how much each one adds to the explanation of the dependent variables

when considered in combination with all of the other predictors. For hypotheses 1 and 4, academic achievement was regressed onto parenting behaviors and curriculum (regression1). Hypotheses 2 and 5 were tested by regressing each social competence variable (learning-related skills and interpersonal skills) onto parenting behaviors and curriculum (regression2 and #3). Hypotheses 3 and 6 were tested by regressing behavior problems onto parenting behaviors and curriculum (regression4). Hypothesis 7 was tested by regressing academic achievement onto social competence and behavior problems (regression5). To test hypotheses 8 and 9, a comparison was made between the results of the regression of academic achievement onto parenting behaviors and curriculum and the regression of academic achievement onto parenting behaviors and curriculum, with the addition of social competence (as a whole) and behavior problems (regression6). Separate regressions were performed to examine the individual contribution of the two social competence variables (learning-related skills and interpersonal skills) with behavior problems on children's academic achievement and behavior problems alone. The first (regression7) compared the results of the regression of academic achievement onto parenting behaviors and curriculum with the regression of academic achievement onto parenting, curriculum, and learning-related and behavior problems. The second (regression8 compared the results of the regression of academic achievement onto parenting behaviors and curriculum with the regression of academic achievement onto parenting, curriculum, and interpersonal skills and behavior problems. The third compared the results of the regression of academic achievement onto parenting behaviors and curriculum with the regression of academic achievement onto parenting, curriculum, and behavior problems (regression9).

# Chapter 4: Results

## Demographic Characteristics

The demographic characteristics of this sample, which included years one and four of the Early Childhood Longitudinal Study – Kindergarten Cohort, are presented in Table 1. The sample consisted of 7,146 children and their mothers. The average ages of the children at kindergarten entry were 65.6 months with a range of 54 to 79 months. Approximately half of the children (*n*=3,475, 48.6%) were enrolled in half-day kindergarten programs and half were enrolled in full-day programs (*n*=3,672, 51.4%). The children were comprised of almost equal numbers of males (*n*=3,589, 50.2%) and females (*n*=3,557, 49.8%). The majority of these children were Caucasian (*n*=4,805, 67.2%), followed by Hispanic (n=1,087, 15.2%), African American (*n*=838, 11.7%), other (*n*=295, 4.1%) and Asian (*n*=121, 1.7%). One hundred eighty-nine children (2.6%) had been previously diagnosed with a learning disability at the start of kindergarten. The majority of these children had never been diagnosed with a learning disability at kindergarten (*n*=6,957, 97.4%). These children were kept in the study to maintain national representation. This variable was controlled for in every analysis. Children's average scores on the combined Academic Rating Scale ranged from 1 to 5 with a mean of 3.5.

In terms of family type, most children had two parents (*n*=5,734, 80.2%). The average annual household income was $54,798. Thirty-one percent of the mothers had reported high school as their highest level of education, and approximately ten percent (*n*=741, 10.3%) had not finished high school. Approximately thirty-three percent (*n*=1,966, 27.5%) had completed some college but had not earned a degree. About

seventeen percent (*n*=1,224, 17.1%) had a bachelor's degree and some (*n*=146, 2.0%) had taken graduate courses. Of the entire sample, approximately five percent (*n*=303, 5.5%) had completed a master's degree or a doctorate (*n*=94, 1.3%). The mothers scored an average of 17.5 on the depression scale with a range of 12 to 48.

Table 1: Demographic Characteristics

| *Demographic Characteristic* | *Children (N= 7,146)* | *Range* |
|---|---|---|
| | Mean (*SD*) | |
| Children's Age in Months at Kindergarten entry | 65.6 (4.2) | 54-79 |
| Academic Achievement in Kindergarten: Average of Combined ARS score | 3.5 (0.8) | 1-5 |
| Maternal Depression | 17.5 (5.5) | 12-48 |
| Household Income (ln) | 2.01 (0.5) | 0-999,999.9 |
| | N (%) | |
| Child Gender | | |
| Male | 3,589 (50.2%) | |
| Female | 3,3557 (49.8%) | |
| Child Race | | |
| Caucasian | 4,805 (67.2%) | |
| African American | 838 (11.7%) | |
| Hispanic | 1,087 (15.2%) | |
| Asian | 121 (1.7%) | |
| Other | 295 (4.1%) | |
| Presence of Learning Disability | | |
| No | 6,957 (97.4%) | |

| | | |
|---|---|---|
| Yes | 189 | (2.6%) |
| Maternal Education – Highest Degree | | |
| 8th Grade or Below | 217 | (3.0%) |
| 9th-12th Grade | 524 | (7.3%) |
| High school Diploma | 2,267 | (31.7%) |
| Voc/Tec Program | 406 | (5.7%) |
| Some College | 1,966 | (27.5%) |
| BA | 1,224 | (17.1%) |
| Grad. School (ND) | 146 | (2.0%) |
| Master's Degree | 303 | (4.2%) |
| Doctorate Degree | 94 | (1.3%) |
| Family Type | | |
| Two-Parent Family | 5,734 | (80.2%) |
| Other | 1,412 | (19.8%) |
| **Kindergarten Program Type** | | |
| **Half-Day** | 3,834 | (48.6%) |
| **Full-Day** | 4,051 | (51.4%) |

*N* = 7,146

Reliability of Study Measures

Cronbach's coefficient alphas were computed to examine the internal consistency of the study measures. The reliability coefficients for these measures are presented in Table 2. Of the independent variable measures, the Cognitive Stimulation scale had a reliability of .56, the Warmth scale had a reliability of .68, and the Depression scale had a reliability of .86. With the exception of the Cognitive Stimulation Scale, all of these reliability coefficients are in an acceptable range. Academic achievement was measured using the Academic Rating Scale (ARS). The reliability score for this measure was .93 for math and .95 for literacy. These scores, as presented in Table 2, demonstrate a high level of internal consistency on both the math and literacy scales of the ARS.

Table 2

*Reliability Scores for Study Measures*

| *Measure* | *Number of Items* | *Cronbach's Alpha* |
|---|---|---|
| Independent Variables | | |
| Cognitive Stimulation | 4 | .56 |
| Warmth | 13 | .68 |
| Maternal Depression | 12 | .86 |
| **Dependent Variables** | | |
| **Academic Rating Scale** | 9 | .93 |
| **Math** | 9 | .95 |
| **Literacy** | | |

*N* = 7,146

*Independent measures.*

Table 3 presents means and standard deviations for scores on three of the five independent variables (cognitive stimulation, warmth, and curriculum). Frequencies for the two parent discipline variables are described in table 4. On the 4-item cognitive stimulation measure, higher scores indicated higher levels of cognitive stimulation. The mothers' total mean score on this scale was 11.78 with a sample range of 4 to 16. The mothers' mean score on the 13-item warmth scale was 45.05 with a sample range of 22 to 52. Higher scores on this scale indicated greater levels of maternal warmth. Child-initiated curriculum was assessed using one item. Higher scores indicated a greater level of child-initiated teaching. The teachers' mean score on this measure was 2.59 with a sample range of 1 to 5.

Table 3

*Scores on Independent Measures*

| *Measure* | *Number of Items* | *Sample Range* | *Mean* | *SD* |
|---|---|---|---|---|
| Cognitive Stimulation | 4 | 4-16 | 11.78 | 2.25 |
| Warmth | 13 | 22-52 | 45.05 | 4.81 |
| Child-initiated Curriculum | 1 | 1-5 | 2.59 | 2.59 |

| **Child Initiated Curriculum** | N | % |
|---|---|---|
| **No Time** | 145 | 2.0 |
| **1/2 hour or less** | 3378 | 47.3 |
| **1 hour** | 2967 | 41.5 |
| **2 hours** | 557 | 7.8 |
| **3 or more hours** | 100 | 1.4 |

*N*=7,146

*Mothers' Discipline Scores*

According to mothers' responses, 46% (*n*=3,316) indicated that they would use inductive discipline to handle the situation, while 53% (*n*=3,380) indicated that they would use power assertive discipline if their child hit them.

The second discipline variable (spanking) was based on the actual number of times the mother reported spanking her child in the past week, however, the variable was dichotomized for all analyses. Consequently, this variable does not reflect level of intensity. Approximately seventy-five percent (75.1%) of the parents reported that they did not spank their children, and close to twenty-five percent (24.9%) reported that they had spanked their children at least once in the preceding week.

Table 4

Frequencies on Independent Measures

| *Measure* | *Number of Items* | *Frequency* | *Percent* |
|---|---|---|---|
| Inductive Discipline | 11 | | |
| Inductive | | 3,316 | 46.4% |
| Power Assertive | | 3,830 | 53.6% |
| **Spanking** | 1 | | |
| **No** | | 5,922 | 75.1% |
| **Yes** | | 1,963 | 24.9% |

*N*=7,146

*Dependent Measures*.

Table 5 presents means and standard deviations for scores on the dependent variables, including social competence, behavior problems, and academic achievement. Third graders' social competence was assessed using the three Social Rating Scale (SRS) subscales for approaches to learning, self-control, and interpersonal skills. The learning-related skills variable was computed by adding the scores from the approaches-to-

learning subscale and the scores on the self-control subscale. Third grade mean score on this measure was 6.26 with a range from 2 to 8. All three of these subscales were summed to create a total social competence score. Third grade mean score for this measure was 9.34 with a range from 3 to 12. Higher scores on each of these subscales indicate higher levels of social skills in the areas assessed.

Children's behavior problems were measured using the two SRS subscales: externalizing and internalizing behavior problems. A total behavior problems score was computed by summing the scores on both the externalizing and the internalizing subscales. Third graders' mean score on this combined measure was 3.10 with a range from 2 to 8. Lower scores indicated fewer behavior problems.

Third grade academic achievement was measured using the average of the scores on the math and literacy scales of the ARS. The third grade mean score on this combined measure was 3.22 with a range from 1 to 5. Higher scores indicated higher academic achievement.

Table 5

*Descriptive Statistics for Dependent Measures*

| *Measure* | *Number of Items* | *Sample Range* | *Mean* | *SD* |
|---|---|---|---|---|
| SRS | | | | |
| Learning-related Skills | 10 | 2-8 | 6.26 | 1.19 |
| Interpersonal Skills | 5 | 1-4 | 3.09 | .651 |
| Social Competence | 15 | 3-12 | 9.34 | .499 |
| Behavior Problems | 9 | 2-8 | 3.099 | .879 |
| **ARS** | | | | |
| **Combined** | 18 | 1-5 | 3.22 | .768 |

*N*=7,146

*Relationships between independent and dependent variables.*

Table 6 presents a correlation matrix depicting the interrelationships among all the independent and dependent variables in this study. Pearson Product-Moment correlation coefficients were computed to examine the relationships between these variables. Cognitive stimulation was significantly correlated with warmth ($r$=.176, $p$<.01), inductive discipline ($r$=.125, $p$<.01), learning-related skills ($r$=.066, $p$<.01), interpersonal skills ($r$=.057, $p$<.01), and academic achievement ($r$=.093, $p$<.01). The higher the cognitive stimulation, the higher scores on all of these variables. Higher scores on cognitive stimulation were negatively correlated with spanking ($r$=-.048, p<.01), type of curriculum ($r$=-.008, $p$<.01), and behavior problems ($r$=-.077, $p$<.01). The higher the cognitive stimulation, the less likely to spank, more likely to be enrolled in a child-initiated kindergarten program, and the lower the behavior problems. Warmth

was significantly positively correlated with inductive discipline ($r$=.065, $p$<.01), learning-related skills ($r$=.066, $p$<.01), interpersonal skills ($r$=.084), $p$<.01), and academic achievement ($r$=.037, $p$<.01). Warmth had significant negative correlations with spanking ($r$=-.048, $p$<.01), child-initiated curriculum ($r$=-.030, $p$<.01), and behavior problems ($r$=-.076, $p$<.01). Inductive discipline was positively related to learning-related skills ($r$=.059, $p$.01), interpersonal skills ($r$=.039, $p$<.01) and academic achievement ($r$=.079, $p$<.01). Inductive discipline was significantly negatively related to spanking ($r$=-.105, $p$<.01), and behavior problems ($r$=.054, $p$<.01). Spanking was significantly positively related to behavior problems (r=.082, $p$<.01) and negatively related to child-initiated curriculum ($r$=-.016, $p$<.01), learning-related skills ($r$=-.142, $p$<.01), interpersonal skills ($r$=-.112, $p$<.01), and academic achievement ($r$=-.111, $p$<.01).

Child-initiated curriculum was significantly positively related to behavior problems ($r$=.042, $p$<.01) and had negative correlations with learning-related skills ($r$=-.012, $p$<.01), and interpersonal skills ($r$=-.007, $p$<.01). Type of curriculum was not correlated with inductive discipline or academic achievement.

Learning-related skills were strongly positively correlated with interpersonal skills ($r$=.827, $p$<.01), and academic achievement ($r$=.491, $p$<.01). Learning-related skills was negatively correlated with behavior problems ($r$=-.376, $p$<.01). Interpersonal skills were positively correlated academic achievement ($r$=.359, $p$<.01), and negatively with behavior problems ($r$=-.340, $p$<.01). Child behavior problems were negatively correlated with academic achievement ($r$=.395, $p$<.01)

Thus, academic achievement was significantly related to all of the parenting variables, and all of the social competence and behavior problem variables. It was not,

however, related to a type of curriculum. However, it is important to see whether the relationships change once controls are introduced.

Table 6

*Correlation Coefficients for Predictor and Outcome Variables*

| Variables | 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 | 9 |
|---|---|---|---|---|---|---|---|---|---|
| **Predictors** | | | | | | | | | |
| 1. Cognitive Stimulation | --- | | | | | | | | |
| 2. Warmth | .176** | --- | | | | | | | |
| 3. Inductive Discipline | .125** | .065** | --- | | | | | | |
| 4. Spanking | -.048** | -.148** | -.105** | --- | | | | | |
| 5. Curriculum | -.008** | -.030** | .006 | -.016 | --- | | | | |
| **Outcomes** | | | | | | | | | |
| 6. Learning-related Skills | .066** | .066** | .059** | -.142** | -.012 | --- | | | |
| 7. Interpersonal Skills | .057** | .084** | .039** | -.112** | -.007 | .827** | --- | | |
| 8. Behavior Problems | -.077** | -.076** | -.054** | .082** | .042** | -.376** | -.340** | --- | |
| 9. Academic Achievement | .093** | .037** | .079** | -.111** | .021 | .491** | .359** | -.221** | --- |

*N*= 7,146

*Regression models*

The major objectives of this study were to understand how parenting behaviors and early childhood curricula in kindergarten influence academic achievement in third grade and to ascertain whether social competence mediates the relationship between the parenting and curriculum factors in kindergarten and academic achievement in third grade. Children's age, gender, race, cognitive performance in kindergarten, presence of cognitive disability, maternal education, maternal depression, household income, family type, and length of kindergarten day were selected as controls because of their previous association with academic achievement. All of these controls were used in the regression models tested. In the first section of these results, I show the effects of the control variables on parenting, curriculum, and social competence and behavior problems. The purpose is to show that these standard variables influence my research variables in ways anticipated. The second section presents the results of the main models testing the hypotheses.

*Regression models of parenting on control variables.*

Each of the parenting variables (cognitive stimulation, warmth, inductive discipline, and spanking) was separately regressed onto the control variables. Table 7 shows the results of regressing cognitive stimulation onto the controls. These results indicated that the age of children at kindergarten entry ($p<.001$), gender ($p<.001$), mother's education level ($p<.001$), race ($p<.001$), and cognitive performance in kindergarten ($p<.01$) were all significantly correlated with cognitive stimulation. Specifically, being younger, being female, having high scores on the combined ARS in kindergarten, and having mothers with high levels of education were related to higher

levels of cognitive stimulation in kindergarten. Black and Hispanic children had lower levels of cognitive stimulation when compared to Caucasian children.

Table 7

*Regression Analysis Examining the Impact of Control Variables on Cognitive Stimulation*

| *Control Variables* | B | SE[1] | p |
|---|---|---|---|
| Program Type | .015 | .043 | .721 |
| Gender | .395 | .080 | .000 |
| Age | -.045 | .010 | .000 |
| Family Type | -.119 | .107 | .226 |
| Maternal Depression | .002 | .008 | .838 |
| Maternal Education | .183 | .023 | .000 |
| Learning Problem Diagnosed | .262 | .222 | .240 |
| Academic Achievement in K (Combined ARS) | .135 | .047 | .005 |
| Income | .047 | .095 | .620 |
| Black | -.467 | .137 | .001 |
| Hispanic | -.562 | .107 | .000 |
| Asian | -.348 | .214 | .107 |
| Other | .118 | .185 | .107 |
| ***N* = 7,146**<br>**$R^2$ = .057**<br>**Adjusted $R^2$= .056**<br>***p*<.001** | | | |

[1]Standard Error
[2] 1=male, 2=female

Table 8 presents the regression of parental warmth onto the control variables. Maternal depression ($p<.001$), presence of a learning disability ($p<.001$), race ($p<.001$) and family income ($p<.01$) were all associated with maternal warmth. Specifically, children whose mothers were less depressed, had never been diagnosed with a learning disability, came from families with higher incomes were more likely to receive higher levels of warmth from their mothers. When compared to Caucasian children, Asian and Hispanic children received less warmth from their mothers.

Table 8

*Regression Analysis Examining the Impact of the Control Variables on Parental Warmth*

| *Control Variables* | B | SE[1] | p |
|---|---|---|---|
| Program Type | -.010 | .077 | .898 |
| Gender | .050 | .130 | .700 |
| Age | .014 | .019 | .464 |
| Family Type | -.345 | .231 | .138 |
| Maternal Depression | -.253 | .022 | .000 |
| Maternal Education | -.109 | .056 | .057 |
| Learning Problem Diagnosed | -2.104 | .554 | .000 |
| Academic Achievement in K (Combined ARS) | -.071 | .118 | .551 |
| Income | .450 | .169 | .009 |
| Black | .265 | .269 | .328 |
| Hispanic | -.553 | .255 | .033 |
| Asian | -1.781 | .443 | .000 |
| Other | -.378 | .541 | .486 |
| **N = 7,146**<br>**$R^2$ = .097**<br>**Adjusted $R^2$= .096** | | | |

[1]Standard Error
[2] 1=male, 2=female

Table 9 presents the results of the regression of inductive discipline onto the control variables. Maternal depression ($p$<.01), maternal education level ($p$<.001), race ($p$<.001), and length of kindergarten school day ($p$<.01) were all correlated with inductive discipline. Specifically, children whose mothers were less depressed and had

higher levels of education, and who went to half-day kindergarten, were more likely to receive inductive discipline. When compared to Caucasians, African American children were less likely to receive inductive discipline.

Table 9

*Regression Analysis Examining the Impact of the Control Variables on Inductive Discipline*

| *Control Variables* | B | SE[1] | p |
|---|---|---|---|
| Program Type | -.028 | .009 | .002 |
| Gender | .007 | .015 | .634 |
| Age | -.003 | .002 | .098 |
| Family Type | .002 | .023 | .929 |
| Maternal Depression | -.005 | .002 | .004 |
| Maternal Education | .031 | .005 | .000 |
| Learning Problem Diagnosed | -.035 | .054 | .525 |
| Academic Achievement in K (Combined ARS) | .017 | .011 | .124 |
| Income | .005 | .021 | .807 |
| Black | -.197 | .027 | .000 |
| Hispanic | -.031 | .026 | .238 |
| Asian | -.034 | .045 | .449 |
| Other | .001 | .040 | .973 |
| ***N* = 7,146**<br>**$R^2$ = .049**<br>**Adjusted $R^2$= .047** | | | |

[1]Standard Error
[2] 1=male, 2=female

Table 10 presents the results of the regression of spanking on the control variables. Maternal depression ($p<.01$), income ($p<.01$), and race ($p<.001$) were all correlated with whether or not children had been spanked in the preceding week. Specifically, children who had mothers with higher levels of depression and lower levels of income were more likely to be spanked. When compared to Caucasian children, African American children and children from the racial category of "other" were more likely to be spanked.

Table 10

*Regression Analysis Examining the Impact of the Control Variables on Spanking*

| *Control Variables* | B | SE[1] | p |
|---|---|---|---|
| Program Type | .015 | .011 | .191 |
| Gender | -.011 | .016 | .490 |
| Age | -.003 | .002 | .058 |
| Family Type | -.025 | .014 | .075 |
| Maternal Depression | .006 | .002 | .001 |
| Maternal Education | -.008 | .005 | .101 |
| Learning Problem Diagnosed | .018 | .050 | .716 |
| Academic Achievement in K (Combined ARS) | -.022 | .012 | .076 |
| Income | -.058 | .018 | .002 |
| Black | .070 | .032 | .030 |
| Hispanic | .017 | .027 | .535 |
| Asian | -.038 | .031 | .220 |
| Other | .074 | .034 | .031 |
| ***N* = 7,146**<br>**$R^2$ = .040**<br>**Adjusted $R^2$= .038** | | | |

[1]Standard Error
[2] 1=male, 2=female

Table 11 presents the results of the regression analysis examining the regression of curriculum onto the control variables. Length of program day ($p$<.001) and race were correlated with child-initiated curriculum. Specifically, children who were enrolled in

full-day kindergarten were more likely to be enrolled in child-initiated kindergarten programs. When compared to Caucasian children, Hispanics were less likely to be enrolled in child-initiated programs.

Table 11

*Regression Analysis Examining the Impact of Control Variables on Curriculum Type*

| *Control Variables* | B | SE[1] | p |
|---|---|---|---|
| Program Type | .240 | .024 | .000 |
| Gender | .004 | .019 | .829 |
| Age Kindergarten Entry | -.002 | .003 | .513 |
| Family Type | -.038 | .040 | .335 |
| Maternal Depression | -.002 | .002 | .379 |
| Maternal Education | .017 | .040 | .057 |
| Learning Problem Diagnosed | -.018 | .067 | 738 |
| Academic Achievement in K (Combined ARS) | .039 | .023 | .091 |
| Income | -.010 | .035 | .770 |
| Black | -.099 | .058 | .089 |
| Hispanic | -.086 | .038 | .027 |
| Asian | -.017 | .070 | .133 |
| Other | .086 | .053 | .128 |
| ***N* = 7,146**<br>**$R^2$ = .118**<br>**Adjusted $R^2$= .116** | | | |

[1]Standard Error
[2] 1=male, 2=female

Each of the social competence variables was also regressed onto the control variables. Table 12 presents the results of the regression of interpersonal skills onto the control variables. In terms of interpersonal skills, gender ($p<.001$), maternal depression ($p<.05$), family type ($p<.01$), maternal education ($p<.01$), presence of a learning disability ($p<.01$), academic achievement in kindergarten ($p<.001$), and race ($p<.01$) were all correlated with children's skills in this area. Specifically, children who were female, who had higher academic achievement in kindergarten, whose mothers had higher levels of education and lower levels of depression, and who came from two-parent families, were more likely to have higher interpersonal skills than children who were males, who had lower levels of academic achievement in kindergarten, whose mothers had lower levels of education and higher levels of depression, and who came from families other than two-parent families. When compared to Caucasian children, African American children had lower levels of interpersonal skills.

Table 12

*Regression Analysis Examining the Impact of Control Variables on Interpersonal Skills*

| *Control Variables* | B | SE[1] | p |
|---|---|---|---|
| Program Type | -.019 | .014 | .169 |
| Gender | .249 | .022 | .000 |
| Age | .001 | .003 | .705 |
| Family Type | .085 | .032 | .009 |
| Maternal Depression | -.005 | .002 | .012 |
| Maternal Education | .024 | .007 | .001 |
| Learning Problem Diagnosed | -.228 | .070 | .002 |
| Academic Achievement in K (Combined ARS) | .105 | .016 | .000 |
| Income | .061 | .035 | .089 |
| Black | -.117 | .039 | .003 |
| Hispanic | .049 | .028 | .079 |
| Asian | .101 | .057 | .080 |
| Other | -.044 | .046 | .333 |
| ***N* = 7,146**<br>**$R^2$ = .107**<br>**Adjusted $R^2$= .106** | | | |

[1]Standard Error
[2] 1=male, 2=female

Table 13 presents the results of the regression of the control variables onto learning-related skills. Children's learning-related skills were correlated with gender ($p<.001$), family type ($p<.001$), maternal depression ($p<.05$), maternal education level ($p<.01$), family type ($p<.001$), presence of a learning disability ($p<.001$), academic achievement in kindergarten ($p<.001$), income ($p<.01$), and race ($p<.001$) for all of these variables. Specifically, children who were female, had never been diagnosed with a learning disability, who had higher levels of academic achievement in kindergarten, whose mothers were less depressed, had higher levels of education, and came from two-parent families with higher household income had higher levels of learning-related skills when compared to children who were male, had been diagnosed with learning disability and had lower levels of academic achievement, whose mothers were more likely to be depressed, had lower levels of education, and came from families other than the two-parent families with lower levels of income. When compared to Caucasian children, African American children had lower learning-related skills and Hispanic and Asian children had higher learning-related skills.

Table 13

*Regression Analysis Examining the Impact of Control Variables on Learning-related Skills*

| *Control Variables* | B | SE[1] | p |
|---|---|---|---|
| Program Type | -.052 | .026 | .050 |
| Gender | .506 | .036 | .000 |
| Age | .008 | .004 | .050 |
| Family Type | .206 | .054 | .000 |
| Maternal Depression | -.010 | .004 | .019 |
| Maternal Education | .047 | .014 | .001 |
| Learning Problem Diagnosed | -.466 | .130 | .001 |
| Academic Achievement in K (Combined ARS) | .280 | .027 | .000 |
| Income | .177 | .057 | .003 |
| Black | -.260 | .075 | .001 |
| Hispanic | .137 | .048 | .005 |
| Asian | .333 | .090 | .000 |
| Other | .020 | .079 | .791 |
| ***N* = 7,146**<br>**$R^2$ = .173**<br>**Adjusted $R^2$= .172** | | | |

[1]Standard Error
[2] 1=male, 2=female

Table 14 presents the results of the regression of child behavior problems onto the control variables. Child behavior problems were correlated with length of kindergarten day ($p<.001$), gender ($p<.001$), age at kindergarten entry ($p<.01$), family type ($p<.01$), presence of learning disabilities ($p<.001$), academic achievement in kindergarten ($p<.001$), and race ($p<.001$). Specifically, children with higher levels of behavior problems were more likely to be younger, to be male, to have lower levels of academic achievement in kindergarten, and to be diagnosed with a learning disability. Children with higher levels of behavior problems were also more likely to be enrolled in full-day kindergarten programs and to come from families other than two-parent families. When compared to Caucasian children, Asian children were less likely to have behavior problems.

Table 14

*Regression Analysis Examining the Impact of the Control Variables on Child Behavior Problems*

| *Control Variables* | B | SE[1] | p |
|---|---|---|---|
| Program Type | .083 | .020 | .000 |
| Gender | -.258 | .025 | .000 |
| Age | -.009 | .003 | .004 |
| Family Type | -.156 | .045 | .001 |
| Maternal Depression | .004 | .003 | .114 |
| Maternal Education | .009 | .009 | .284 |
| Learning Problem Diagnosed | .560 | .117 | .000 |
| Academic Achievement in K (Combined ARS) | -.231 | .022 | .000 |
| Income | -.022 | .022 | .000 |
| Black | .054 | .054 | .316 |
| Hispanic | -.012 | .046 | .789 |
| Asian | -.223 | .058 | .000 |
| Other | .084 | .064 | .192 |
| ***N* = 7,146**<br>**$R^2$ = .118**<br>**Adjusted $R^2$= .117** | | | |

[1]Standard Error
[2] 1=male, 2=female

Table 15 presents the results of the regression of academic achievement in third grade onto the control variables. Academic achievement in third grade was correlated with gender ($p<.05$), family type ($p<.05$), maternal education level ($p<.001$), presence of learning disabilities ($p<.05$), academic achievement in kindergarten ($p<.001$), and race ($p<.001$). Specifically, children with higher academic achievement in third grade were more likely to be female, to have higher levels of academic achievement in kindergarten, and to not be diagnosed with a learning disability when compared to children who were male had lower higher academic achievement in kindergarten, and had been diagnosed with a learning disability. Children with higher levels of academic achievement in third grade were also more likely to be come from two-parent families and have mothers with higher levels of education when compared to children from families other than two-parent families and who had mothers with lower levels of education. When compared to Caucasian children, Hispanic and Asian children were more likely to have higher levels of academic achievement in the third grade.

Table 15
*Regression Analysis Examining the Impact of the Control Variables on Academic Achievement in Third Grade*

| *Control Variables* | B | SE[1] | p |
|---|---|---|---|
| Program Type | .004 | .014 | .784 |
| Gender | .047 | .020 | .020 |
| Age | .005 | .003 | .083 |
| Family Type | .070 | .029 | .018 |
| Maternal Depression | -.003 | .002 | .126 |
| Maternal Education | .050 | .007 | .000 |
| Learning Problem Diagnosed | -.249 | .098 | .012 |
| Academic Achievement in K (Combined ARS) | .410 | .015 | .000 |
| Income | .117 | .024 | .000 |
| Black | -.066 | .039 | .096 |
| Hispanic | .074 | .036 | .041 |
| Asian | .154 | .061 | .014 |
| Other | .002 | .039 | .960 |
| ***N* = 7,146**<br>**Adjusted $R^2$ = .278** | | | |

[1]Standard Error
[2] 1=male, 2=female

*Tests of main regression models.*

All of the main regression models in the current study controlled for academic achievement in kindergarten using the children's scores on the Academic Rating Scale. In every regression the following control variables were used: Academic achievement in kindergarten, age at kindergarten entry, child's gender, child's race, presence of learning disability, maternal education level, maternal depression, family type, household income, and length of kindergarten day. All regressions were weighted by population weights. Only the relationships among the key independent and dependent variables are shown. For the full regressions, including control variables, see Appendices E-M.

*Regression 1: The regression of academic achievement in third grade onto parenting and child-initiated curriculum in kindergarten.*

Table 16 presents the results of the regression model #1 for hypotheses 1 and 4. This model was significant with an adjusted $R^2$ of .278, $p<.001$. This model explained almost 28% of the variance in academic achievement in third grade, primarily because of the inclusion of academic achievement in kindergarten as a control. The only independent parenting variable found to be a significant predictor of children's third grade academic achievement was the presence of spanking ($p<.05$). Children who had not been spanked in the week before the kindergarten survey had higher levels of academic achievement in third grade than children who had been spanked. A child-initiated curriculum was not associated with academic achievement.

Hypothesis 1 predicted that higher levels of cognitive stimulation, warmth, and inductive discipline and absence of spanking would be associated with higher levels of academic achievement. Thus, hypotheses 1 was partially supported in that the absence of

spanking was associated with higher levels of academic achievement in the third grade. Hypothesis 4 predicted that a child-initiated curriculum in kindergarten would be associated with higher levels of academic achievement. Hypothesis 4 was not supported.

Table 16

*Regression Analysis Examining the Impact of Parenting and Child-Initiated Curriculum on Academic Achievement in Third Grade*

| *Predictor Variables* | B | SE[1] | Beta | p |
|---|---|---|---|---|
| Cognitive Stimulation | .009 | .005 | .026 | .071 |
| Warmth | -.002 | .003 | -.014 | .392 |
| Inductive Discipline | .015 | .022 | 1.031 | .484 |
| Spanking | -.069 | .030 | -.039 | .022 |
| Child-Initiated Curriculum | -.017 | -.016 | -1.538 | .300 |
| ***N* = 7,146**<br>**$R^2$= .280**<br>**Adjusted $R^2$ = .278** | | | | |

[1]Standard Error

*Regression 2: The regression of learning-related skills in third grade onto parenting and curriculum in kindergarten.*

Table 17 presents the results of the regression model #2 for hypotheses 2 and 5. This model was significant with an adjusted $R^2$ of .178. This model explains almost 17% of the variance in learning-related skills. The only independent parenting variable found to be significant was spanking ($p<.001$). Children who were spanked in kindergarten had lower levels of learning-related skills in third grade than those who were not spanked.

Cognitive stimulation, inductive discipline, and child-initiated curriculum in kindergarten were not found to be significantly associated with learning-related skills in third grade.

Hypothesis 2 predicted that higher cognitive stimulation, greater warmth, more inductive discipline, and the absence of spanking would predict higher levels of learning-related skills in third grade. Thus, hypothesis 2 was partially supported in that spanking was significantly associated with lower learning-related skills. Hypothesis 5 predicted that a child-initiated curriculum in kindergarten would predict higher levels of learning-related skills in third grade. This hypothesis was not supported.

Table 17

*Regression Analysis Examining Predictors of Children's Learning-Related Skills*

| *Predictor Variables* | B | SE[1] | Beta | p |
|---|---|---|---|---|
| Cognitive Stimulation | .001 | .009 | .002 | .915 |
| Warmth | .006 | .004 | .021 | .160 |
| Inductive Discipline | -.019 | .031 | -.008 | .547 |
| Spanking | -.229 | .038 | -.080 | .000 |
| Child-Initiated Curriculum | -.019 | .031 | -.011 | .540 |
| ***N* = 7,146**<br>**$R^2$ = .180**<br>**Adjusted $R^2$ =.178** | | | | |

[1]Standard Error

*Regression 3: The regression of interpersonal skills onto parenting and curriculum.*

Table 18 presents the results of the regression model #3 for hypotheses 2 and 5. The overall model was significant with an adjusted $R^2$ of .112. This model explained 11% of the variance in children's interpersonal skills. Independent parenting variables found to be significant were spanking ($p<.001$) and warmth ($p<.001$). When compared to children whose mothers spanked them and who reported engaging in fewer warm parenting behaviors, the absence of spanking and higher levels of warmth in kindergarten were associated with higher levels of interpersonal skills in third grade. Inductive discipline, cognitive stimulation, and child-initiated curriculum were not found to be significant predictors of children's third grade interpersonal skills.

Hypothesis 2 predicted that higher cognitive stimulation, warmth, and inductive discipline and the absence of spanking would predict higher levels of interpersonal skills in third grade. Thus, this hypothesis was partially supported in that the absence of spanking and higher warmth was associated with higher interpersonal skills. Hypothesis 5 predicted that a child-initiated curriculum in kindergarten would predict higher levels of interpersonal skills in third grade. This hypothesis was not supported in that a child-initiated curriculum was not related to interpersonal skills in third grade.

Table 18

*Regression Analysis Examining the Predictors of Children's Interpersonal Skills*

| *Predictor Variables* | B | SE[1] | Beta | p |
|---|---|---|---|---|
| Cognitive Stimulation | .000 | .006 | .000 | .999 |
| Warmth | .007 | .002 | .050 | .003 |
| Inductive Discipline | -.019 | .019 | -.015 | .313 |
| Spanking | -.093 | .024 | -.062 | .000 |
| Child-Initiated Curriculum | -.005 | .018 | -.005 | .791 |
| ***N* = 7,146**<br>**$R^2$ = .114**<br>**Adjusted $R^2$ =.112** | | | | |

[1]Standard Error

*Regression 4: The regression of behavior problems onto parenting and curriculum*

Table 19 presents the results of the regression model #4 for hypotheses 3 and 6. The overall model was significant with an adjusted $R^2$ of .122. This model explained 12% of the variance in children's behavior problems. Independent parenting variables found to be significant were cognitive stimulation ($p<.05$), and warmth ($p<.05$). Mothers who engaged in higher levels of cognitive stimulation and warmth were more likely to have children with low levels of behavior problems than mothers who had lower levels of cognitive stimulation and warmth. Inductive discipline and child-initiated curriculum were not found to be significant predictors of children's behavior problems in third grade. Curriculum was not related to behavior problems in third grade.

Hypothesis 3 predicted that higher cognitive stimulation, warmth, and inductive discipline and the absence of spanking would predict lower levels of behavior problems in third grade. Thus, this hypothesis was partially supported in that cognitive stimulation and warmth were related to fewer behavior problems.

Hypothesis 6 predicted that a child-initiated curriculum in kindergarten would predict lower levels of behavior problems in third grade. This hypothesis was not supported.

Table 19

*Regression Analysis Examining Predictors of Children's Behavior Problems*

| *Predictor Variables* | B | SE[1] | Beta | p |
|---|---|---|---|---|
| Cognitive Stimulation | -.015 | .007 | -.038 | .028 |
| Warmth | -.007 | .003 | -.038 | .025 |
| Inductive Discipline | -.020 | .023 | -.012 | .388 |
| Spanking | .068 | .036 | .033 | .067 |
| Child-Initiated Curriculum | .032 | .020 | .026 | .110 |
| ***N* = 7,146**<br>**$R^2$ = .124**<br>**Adjusted $R^2$ =.122** | | | | |

[1]Standard Error

*Regression 5: The regression of academic achievement onto social competence and behavior problems.*

Table 20 presents the results of the regression model for hypothesis 7. The overall model was significant with an adjusted $R^2$ of .379. This model explains almost 38% of the variance in children's academic achievement in the third grade. As mentioned previously, academic achievement in kindergarten was controlled. Social competence ($p$<.001) was found to be a significant predictor of academic achievement in the third grade, but behavior problems were not found to be a significant predictor of academic achievement in the third grade. Children with higher levels of social competence in kindergarten were more likely to have higher academic achievement in third grade than children with lower levels of social competence.

Hypothesis 7 predicted that higher levels of social competence and lower levels of behavior problems would be associated with higher levels of academic achievement in the third grade. This hypothesis was partially supported in that it was supported for social competence but not for behavior problems.

Table 20

*Regression Analysis Examining Social Competence and Behavior Problems as Predictors of Children's Academic Achievement*

| *Predictor Variables* | B | SE[1] | Beta | p |
|---|---|---|---|---|
| Social Competence | .155 | .008 | .354 | .000 |
| Behavior Problems | .011 | .013 | .016 | .394 |
| ***N* = 7,146**<br>**$R^2$ = .380**<br>**Adjusted $R^2$ =.379** | | | | |

[1]Standard Error

*Regression 6: The addition of social competence and behavior problems in third grade to the regression of academic achievement in third grade onto parenting and curriculum in kindergarten (regression 1).*

Table 21 presents the results of the regression model for hypotheses 8 and 9. The overall model was significant with an adjusted $R^2$ of .380. This model explains 38% of the variance in children's academic achievement in third grade. Thus, the addition of social competence and behavior problems explains an additional 10% of the variance above and beyond the amount explained in regression1 (28%, $R^2$ adjusted = .279), academic achievement onto parenting and curriculum. In this model, social competence ($p<.001$) was significantly related to academic achievement. The effect size for social competence was .20. Children with higher social competence were more likely to have higher academic achievement in third grade. Behavior problems were not related to academic achievement.

Hypothesis 8 predicted that social competence and behavior problems in third grade would mediate the association of parenting behaviors in kindergarten and academic achievement in third grade. In regression1 the parenting variable related to academic achievement was spanking ($p<.005$). In this model spanking was no longer related to academic achievement. Thus, this hypothesis was partially supported in that the relationship between spanking and academic achievement in regression1 declined in size and was reduced to insignificance when social competence was added to the equation. Specifically, social competence was found to mediate between spanking in kindergarten and academic achievement in third grade. Mothers who spanked their children were more likely to have children with lower levels of academic achievement in third grade

due to the negative impact that spanking has on children's social competence. These results indicate that social competence mediated the relationship between spanking and academic achievement.

Hypothesis 9 predicted that social competence and behavior problems would mediate the association of child-initiated curriculum in kindergarten and academic achievement in third grade. There was no association between child-initiated curriculum and academic achievement in either regression. Thus, hypothesis 8 was not supported.

Table 21

*Regression Analysis Examining Social Competence and Behavior Problems as Mediators Between Parenting and Curriculum in Kindergarten and Children's Academic Achievement in Third Grade.*

| *Predictor Variables* | B | SE[1] | Beta | p |
|---|---|---|---|---|
| Cognitive Stimulation | .009 | .005 | .026 | .066 |
| Warmth | -.004 | .002 | -.024 | .107 |
| Inductive Discipline | .022 | .021 | .014 | .313 |
| Spanking | -.022 | .025 | -.012 | .386 |
| Child-Initiated Curriculum | -.014 | .014 | -.013 | .338 |
| Social Competence | .154 | .008 | .354 | .000 |
| Behavior Problems | .015 | .013 | .017 | .249 |
| ***N* = 7,146**<br>**$R^2$ = .382**<br>**Adjusted $R^2$ =.380** | | | | |

[1]Standard Error

*Regression 7: The addition of learning- related skills and behavior problems in third grade to the regression of academic achievement in third grade on parenting and curriculum in kindergarten (component of regression 1).*

Table 22 presents the results of regression model 7 for parts of hypotheses eight and nine. This model is used to ascertain if learning-related skills and behavior problems mediate the association between parenting and curriculum in kindergarten and academic achievement in third grade. The overall model was significant with an adjusted $R^2$ of .395. This model explains 39% of the variance in children's third grade academic achievement. Thus, the addition of learning-related skills and behavior problems explained an additional 11% of the variance above and beyond regression1 which explains 28% ($R^2$ adjusted = .279) of the variance in children's academic achievement in third grade.

This regression shows that learning-related skills ($p<.001$) are significantly related to academic achievement in third grade. The effect size for learning-related skills was .32. Behavior problems were not significantly related to academic achievement. Regression 1 found that spanking ($p<.001$) was a significant predictor of academic achievement in third grade. In this model, none of the parenting variables were found to be significant predictors of academic achievement in third grade. Thus, spanking was reduced to insignificance with the addition of learning-related skills.

Part of hypothesis 8 predicted that learning-related skills and behavior problems would mediate the association between parenting in kindergarten and academic achievement in third grade. Thus, part of hypothesis 8 was partially supported in that spanking was reduced to insignificance with the addition of learning-related skills.

Specifically, learning-related skills mediate the association between spanking in kindergarten and academic achievement in third grade. Calculations using the Sobel Test (Preacher & Hayes, 2004) were conducted and confirmed this mediation with $p<.001$.

Part of hypothesis 9 predicted that learning-related skills and behavior problems would mediate the association between child-initiated curriculum and academic achievement in third grade. Child-initiated curriculum was not related to academic achievement in either model.

Table 22

*Regression Analysis Examining Learning-related Skills and Behavior Problems as Mediators Between Parenting and Curriculum in Kindergarten and Academic Achievement in Third Grade.*

| *Predictor Variables* | B | SE[1] | Beta | p |
|---|---|---|---|---|
| Cognitive Stimulation | .009 | .005 | .026 | .068 |
| Warmth | -.003 | .002 | -.021 | .164 |
| Inductive Discipline | .020 | .021 | .013 | .334 |
| Spanking | -.016 | .025 | -.009 | .538 |
| Child-Initiated Curriculum | -.031 | .014 | -.012 | .358 |
| Learning-related Skills | .248 | .012 | .384 | .000 |
| Behavior Problems | .019 | .013 | .022 | .131 |
| ***N* = 7,146**<br>**$R^2$ = .397**<br>**Adjusted $R^2$ =.395** | | | | |

[1]Standard Error

*Regression 8: The addition of interpersonal skills and behavior problems in third grade into the regression of academic achievement in third grade onto parenting and curriculum in kindergarten.*

Table 23 presents the results of regression model 8 for parts of hypotheses 8 and 9. This model was used to ascertain if interpersonal skills and behavior problems mediated the association between parenting and curriculum in kindergarten and academic achievement in third grade. The overall model was significant with an adjusted $R^2$ of .335. This model explained 35 % of the variance in children's third grade academic achievement. Thus, the addition of interpersonal skills and behavior problems explained an additional 7% of the variance is explained above and beyond regression1, which only explained 28% ($R^2$ adjusted = .279) of the variance in children's academic achievement in third grade. Interpersonal skills ($p<.001$) were found to be significant predictors of academic achievement even when parenting and curriculum were accounted for. The effect size for interpersonal skills was .32. Children with higher interpersonal skills in third grade were more likely to exhibit higher levels of academic achievement in third grade than those children with lower interpersonal skills. Behavior problems were not significant predictors of academic achievement in the third grade.

None of the independent parenting variables were found to be significant predictors of academic achievement when interpersonal skills and behavior problems were accounted for.

Part of hypothesis 8 predicted that interpersonal skills and behavior problems would mediate the association between parenting in kindergarten and academic achievement in third grade. In regression1, spanking was a significant predictor of

academic achievement in third grade. Unlike regression1, however, spanking was no longer a significant predictor of academic achievement. Thus, part of hypothesis 8 was supported in that spanking was reduced to insignificance with the addition of interpersonal skills and behavior problems. Calculations using the Sobel Test (Preacher & Hayes, 2004) were conducted and confirmed this mediation with $p<.001$.

Child-initiated curriculum was not found to be a significant predictor of academic achievement in either this regression or regression1. Part of hypothesis 9 predicted that interpersonal skills and behavior problems would mediate the association between child-initiated curriculum and academic achievement in third grade. Although interpersonal skills were significantly associated with academic achievement, a child-initiated curriculum was not significant in either model. Thus, this part of hypothesis was not supported, in that curriculum was unrelated to academic achievement even before adding interpersonal skills and behavior problems.

Table 23

*Regression Analysis Examining Interpersonal Skills and Behavior Problems as Mediators Between Parenting and Curriculum in Kindergarten and Academic Achievement in Third Grade*

| *Predictor Variables* | B | SE[1] | Beta | p |
|---|---|---|---|---|
| Cognitive Stimulation | .009 | .005 | .026 | .073 |
| Warmth | -.004 | .003 | -.027 | .092 |
| Inductive Discipline | .021 | .022 | .014 | .342 |
| Spanking | -.041 | .026 | -.023 | .115 |
| Child-Initiated Curriculum | -.015 | .015 | -.014 | .324 |
| Interpersonal Skills | .294 | .021 | .249 | .000 |
| Behavior Problems | -.015 | .013 | -.017 | .274 |
| ***N* = 7,146**<br>**$R^2$ = .337**<br>**Adjusted $R^2$ =.335** | | | | |

[1]Standard Error

Table 24 presents regression analysis 9, examining the mediating role that behavior problems have between parenting and curriculum in kindergarten and academic achievement in third grade. The overall model was significant with an adjusted $R^2$ of .284. Thus, this model explained 28% of the variance in children's third grade academic achievement. Specifically, behavior problems were negatively related to academic achievement. The effect size for behavior problems was -.10. The regression of academic achievement onto parenting and curriculum without the behavior problems

variable had an adjusted $R^2$ of .287, accounting for approximately 28% of the variance in third grade academic achievement. Thus, the addition of behavior problems accounted for no additional variance in academic achievement in third grade.

Spanking was the only independent parenting predictor of academic achievement in this regression ($p<.05$). Spanking was also significantly related to academic achievement in regression1 ($p<.05$). Thus, behavior problems did not mediate the association between spanking and academic achievement. Calculations using the Sobel Test (Preacher & Hayes, 2004) were conducted and confirmed that behavior problems did not mediate the relationship between spanking and academic achievement.

Table 24

*Regression Analysis Examining Behavior Problems as a Mediator Between Parenting and Curriculum in Kindergarten and Academic Achievement in Third Grade*

| *Predictor Variables* | B | SE[1] | Beta | p |
|---|---|---|---|---|
| Cognitive Stimulation | .008 | .005 | .023 | .107 |
| Warmth | -.003 | .003 | -.017 | .301 |
| Inductive Discipline | .014 | .022 | .009 | .531 |
| Spanking | -.064 | .029 | -.036 | .032 |
| Child-Initiated Curriculum | -.014 | .016 | -.014 | .380 |
| Behavior Problems | -.073 | .013 | -.083 | .000 |
| ***N* = 7,146**<br>**$R^2$ = .286**<br>**Adjusted $R^2$ =.284** | | | | |

[1]Standard Error

# Chapter 5: Discussion

The current study examined how parenting and the early childhood curriculum in kindergarten influence children's academic achievement in third grade, including the mediating influences of learning-related skills, interpersonal skills, and behavior problems in third grade. Several important child, family, and school variables found to be related to academic achievement were taken into account, including the age of the child at the beginning of kindergarten, gender, race, presence of a learning disability, academic achievement in kindergarten, maternal education, maternal depression, family type, household income, and enrollment in half-day versus full-day kindergarten.

This study extends the existing literature examining the impact of parenting and early childhood curricula on children's later academic achievement in two important ways. First, this study expands the research examining the influence of two separate components of social competence, learning-related and interpersonal skills. By considering these two aspects of social competence in conjunction with behavior problems, a clear picture emerged about how social competence influences academic achievement. Second, this study examined the role of both of these aspects of social competence and behavior problems as mediators between parenting and academic achievement and curriculum and academic achievement.

## *Ecological theory*

The ecological theoretical model was used in the current research because it best addresses the contextual factors associated with children's academic and social competence. The ecological model states that the environment and families are mutually shaping systems, each changing with time, and adapting to the changes in each other

(Bronfenbrenner, 1986). This relationship was observed in the current research. For example, whether the parent spanked in kindergarten was associated with academic achievement in the third grade. In addition, whether the parent spanked in kindergarten was associated with children's social competence, both learning-related skills and interpersonal skills in the third grade. Social competence, in turn, was related to children's academic achievement in the third grade. Thus, spanking in kindergarten has both direct and indirect influences on children's academic achievement via its influence on children's ability to get along with others and to focus in the classroom.

This theory has implications for the practice of teaching. According to ecological theory, if the relationships in the immediate microsystem break down, the child will not have the skills to adapt to school. Results of this study showed that children's social skills play an important role in their academic success in school. Parents represent, perhaps, the most influential factor in children's development of social skills. However, children are showing up in schools without the foundational skills necessary to learn (Rimm-Kauffman, Pianta, & Cox, 2000). Given the problems occurring in children's homes, it seems that a large share of the responsibility for creating stable, long-term relationships is falling on the schools, which have heretofore focused almost exclusively upon academic instruction and preparation. Understanding how to foster healthy and stable relationships between children and between children and their teachers is necessary in order to meet the challenges of the future.

This dissertation focused on pathways of influence from socialization experiences to the child. It is clear, however, that children can have a significant impact on their parents, their teachers, and their peers. As children grow older and become more

independent, systems of influence reflecting the interactive effects of children, families, teachers, and peers need to be considered when investigating children's success in school (Bronfenbrenner, 1986).

Table 25 presents a summary of the hypotheses and corresponding results.

Table 25

*Hypotheses and Corresponding Results*

| Hypotheses | Results |
|---|---|
| Hypothesis 1:<br>More positive parenting behaviors (e.g. warmth, inductive discipline, cognitive stimulation and the absence of spanking) in kindergarten will each be associated with higher levels of academic achievement in third grade | Partially supported for spanking |
| Hypothesis 2:<br>More positive parenting behaviors (e.g. warmth, inductive discipline, cognitive stimulation and the absence of spanking) in kindergarten will each be associated with higher levels of third graders' social competence. | Partially supported for the impact of spanking on learning-related skills.<br>Partially supported for the impact of warmth and spanking on interpersonal skills. |
| Hypothesis 3:<br>More positive parenting behaviors (e.g., warmth, inductive discipline, the absence of spanking, and cognitive stimulation) in kindergarten will each be associated with lower levels of behavior problems in third grade | Partially supported for cognitive stimulation and warmth. |
| Hypothesis 4:<br>A child-initiated curriculum in kindergarten will be associated with higher levels of academic achievement in third grade. | Not supported |
| Hypothesis 5:<br>A child-initiated curriculum in kindergarten will be associated with higher social competence in third grade. | Not supported |

| | |
|---|---|
| Hypothesis 6:<br>A child-initiated curriculum in kindergarten will be associated with lower child behavior problems in third grade. | Not supported |
| Hypothesis 7:<br>a) Higher levels of social competence in third grade will be associated with higher levels of academic achievement in third grade.<br>b) Lower levels of behavior problems in third grade will be associated with higher levels of academic achievement in third grade. | a) Supported<br>b) Not supported |
| Hypothesis 8:<br>a) When interpersonal skills and behavior problems in third grade are added to regression1 (academic achievement in third grade onto parenting and curriculum in kindergarten), the effects of parenting in kindergarten will be significantly reduced.<br>b) When learning-related skills and behavior problems in third grade are added to regression1 (academic achievement in third grade onto parenting and curriculum in kindergarten), the effects of parenting in kindergarten will be significantly reduced.<br>c) When behavior problems in third grade are added to regression1 (academic achievement in third grade onto parenting and curriculum in kindergarten), the effects of parenting in kindergarten will be significantly reduced. | a) Partially supported in that interpersonal skills mediated the impact of spanking on academic achievement.<br>b) Partially supported in that learning-related skills mediated the relationship between spanking and academic achievement.<br>c) Not supported |

| Hypothesis 9 | |
|---|---|
| a) When interpersonal skills and behavior problems in third grade are added to regression1 (academic achievement in third grade onto parenting and curriculum in kindergarten), the effects of curriculum will be significantly reduced. | a) Not supported |
| b) When learning-related skills and behavior problems in third grade are added to regression1 (academic achievement in third grade onto parenting and curriculum in kindergarten), the effects of curriculum will be significantly reduced. | b) Not supported |
| c) When behavior problems in third grade are added to regression1 (academic achievement in third grade onto parenting and curriculum in kindergarten), the effects of curriculum will be significantly reduced. | c) Not supported |

*Parenting and academic achievement*

Only one of the parenting variables in this study was found to have a significant relationship to academic achievement. The study's findings suggest that the absence of spanking in kindergarten is related to higher levels of academic achievement in third grade even when kindergarten academic achievement and all other control variables and curriculum model were taken into account. These findings are consistent with the current literature for Euro-Americans (Hill & Craft, 2003; Izzo et al., 1999). One explanation could be that spanking increases the experience of negative emotions such as anger, mistrust and resentment in children which, in turn, has a negative impact on the quality of the parent-child relationship (Kochanska et al., 2004). Long term relationships have been

shown between attachment security and school age cognitive skills (Stams, Juffer, & Van IJzendoorn, 2002).

An alternative explanation could be that other child behaviors cause spanking and lower academic achievement that were not accounted for in this study. For example, the measure of spanking did not account for behavior problems in kindergarten for which parents spank, including lying, fighting, and disobedience. These behaviors have been associated with lower academic achievement (Huffman et al., 2000). However, this study did control for academic achievement in kindergarten.

Contrary to expectations and previous research (Campbell & von Stauffenberg, 2005; Smith et al., 2000), maternal warmth and inductive discipline were not directly related to academic achievement in the third grade. It is possible that lack of support for previous findings could be due to the nature of the statistical analysis used in this study. In multiple regressions, it is difficult to determine which of two highly correlated variables account for the relationship with the dependent variable. In this case, both inductive discipline and spanking were significantly related to one another. Parents who spank their children were also less likely to report that they would use inductive discipline when dealing with a hitting child. The presence or absence of spanking might overshadow whether or not parents use inductive discipline. Maternal warmth was also correlated with spanking and cognitive stimulation. Mothers who engaged in higher levels of cognitive stimulation and who did not spank their children were also more likely to report higher levels of warmth. Thus, in a similar fashion, the presence of cognitive stimulation and spanking might overshadow parental warmth.

*Parenting and social competence/learning-related skills*

This study's findings suggest that the presence of spanking in the kindergarten years was the only parenting variable related to children's learning-related skills in third grade. Mothers' level of warmth and presence of inductive discipline were not directly related to their children's learning-related skills in third grade. Interestingly, cognitive stimulation was unrelated to learning-related skills. Learning-related skills reflect high-level processing skills such as the ability to concentrate, exert self control, persist at a task, and think creatively. It would seem that cognitive stimulation would have a positive impact on children's learning-related skills due to the longer time that children spend practicing cognitive activities. These findings suggest that the nature of our interactions with our children might have more impact on these executive processing skills than merely providing them with academic activities. More research is necessary to understand how parenting influences the development of these types of skills.

*Parenting and social competence/interpersonal skills*

Parenting influences interpersonal skills in a way similar to its influence on learning-related skills, but in this case both spanking and warmth were related to children's interpersonal skills in the third grade. Specifically, children whose mothers spanked them and who displayed lower levels of warmth in kindergarten had lower interpersonal skills than those children whose mothers did not spank and were warmer. This is consistent with previous research that shows that power-assertive discipline strategies and lack of warmth have negative influences on children's social competence (Kennedy, 1992; Landry et al., 1998).

Neither inductive discipline nor cognitive stimulation in kindergarten was associated with interpersonal skills in the third grade. This is inconsistent with past literature on inductive discipline and interpersonal skills (Denham et al., 1991; Hart et al., 1992). It is possible that lack of support for previous findings could be due to the nature of the statistical analysis used in this study. As mentioned previously, in multiple regression it is difficult to determine which of two highly correlated variables accounts for the relationship with the dependent variable. In this case, both inductive discipline and spanking were significantly related to one another. Parents who spank their children were also less likely to report that they would use inductive discipline when dealing with a misbehaving child. The presence or absence of spanking might overshadow whether or not parents use inductive discipline.

*Parenting and behavior problems*

Consistent with previous studies (Hill & Craft, 2003; Izzo et al., 1999; Petit et al., 1997), cognitive stimulation and warmth were associated with children's behavior problems in the third grade. Children were more likely to have behavior problems in the third grade if their mothers reported lower levels of cognitive stimulation and warmth. Unlike the findings in the Hart et al. (1992) study, inductive discipline was not related to children's third grade behavior problems. As previously mentioned, lack of findings for inductive discipline could be due to the high correlation between inductive discipline and spanking. Interestingly, spanking was related only at a trend level. This is inconsistent with previous research (e.g., Petit et al., 1997) but may be a result of also including inductive discipline, with which spanking is correlated.

*Curriculum and academic achievement*

Inconsistent with past research, a child-initiated curriculum in kindergarten had no impact on children's academic achievement in the third grade. Two possible suggestions for these results relate to the type of analysis used and the way that this construct was assessed. In this multiple regression, parenting and curriculum were examined together to see how they jointly explained the variance in third graders' academic achievement. Even when examined separately, however, curriculum did not explain academic achievement.

It is also possible that the curriculum measure did not adequately capture the type of curriculum. Only one question was used to assess the level of child-initiated approach used in the classroom. It is difficult for one item to tap a multifaceted construct. A more robust finding may have been resulted from the use of multiple items assessing the various theoretical differences between academic directed and child-initiated models delineated by Minuchin and Shapiro (1983). The positive impact of a child-initiated curriculum on later academic achievement is theoretically due to several components, such as their enhancement of children as active, independent thinkers who are intrinsically motivated to learn. Information from teachers on their conception of how children learn, the conception of the teacher's role, and information on the amount of time spent on social activities would have provided a better assessment of the impact of curriculum type on academic achievement. In addition, information on teacher beliefs about how to handle social conflict both in and outside of the classroom would have been useful.

These divergent findings may also result from the academic assessments used in this study. As found in previous studies (Hyson et al., 1990; Rescorla et al., 1991; Stipek et al., 1995), when measures of academic achievement were based on traditional measures and did not include broader aspects of intellectual development, studies comparing the academic effectiveness of child-initiated and academic directed programs were inconsistent. In the current study, the measures used to assess academic achievement did not include measures of creativity, critical analysis, or independent thought. As in the academic directed programs, these measures assessed the product of learning (e.g. ability to add and subtract) over the actual process of learning (ability to critically analyze an equation). Future studies should examine how different curriculum models affect these aspects of learning.

*Curriculum and social competence/learning-related skills and interpersonal skills*

Contrary to previous research, type of curriculum in kindergarten was not significantly related to children's social competence in third grade. In theory, child-initiated curricula foster greater social competence via the amount of time afforded to develop social relationships, and because a specific goal of these type of programs is to enhance the development of social competence. The analysis present here did not support this theory and previous research. As mentioned previously, it is possible that the curriculum measure did not adequately capture the type of curriculum. Lack of support for this hypothesis may also be due to the relative strength of the parenting variable over the strength of the curriculum variable in relationship to social competence.

*Curriculum and behavior problems*

Being in a child-initiated curriculum in kindergarten was not significantly negatively related to child behavior problems in the third grade. These findings were inconsistent with previous research showing that children enrolled in child-initiated curriculum programs had lower levels of behavior problems compared to children enrolled in more academic-directed programs (Hart et al., 1993; Henry et al., 2004; Schweinhart & Weikart, 1997).

In this study, externalizing and internalizing behaviors were analyzed together, which, therefore, did not permit an examination of how curriculum affected these behaviors separately. Given the limitations associated with the study's measurement of curriculum, the association between child-initiated curriculum and behavior problems should be interpreted cautiously.

*Social competence, behavior problems and academic achievement*

Social competence in kindergarten was significantly related to third graders' academic achievement. Third grade children who were rated as having high levels of social competence in kindergarten were more likely than those children rated as having low levels of social competence to have high academic achievement at this time. This is consistent with previous research demonstrating the link between social competence and academic achievement.

Behavior problems were not consistently related to academic achievement. They were related until measures of social competence were included. Previous research on the role of behavior problems on academic achievement has been inconsistent. Some

research has demonstrated associations between behavior problems and academic achievement (Agostin & Bain, 1997; Ladd et al., 1999). Other studies have found behavior problems to be unrelated to academic performance. A possible explanation for these divergent findings could be whether or not certain types of social skills such as learning-related skills were considered. This is consistent with findings from the other studies (August & Garfinkel, 1990; Caprara et al., 2000; Hinshaw, 1992). For example, August & Garfinkel (1990) concluded that inattention and hyperactivity, two skills related to learning-related skills, were stronger correlates of academic underachievement in childhood than aggression. Hinshaw (1992) concluded that early attention problems were more robust predictors of reading problems than antisocial behavior. As mentioned earlier, more research using measures which tap learning-related skills such as attention regulation might explain how child behavior problems hinder academic success.

An alternative explanation for the lack of findings for behavior problems and academic achievement could be due the measurement of behavior problems in this study. Specifically, behavior problems included both internalizing and externalizing problems.

*Social competence as a mediator between parenting and academic achievement*

One purpose of the current study was to understand how parents' behaviors with their children in early childhood might influence their children's school performance in the third grade. This study expands previous research by assessing the role of social competence and behavior problems as mediators between parenting and academic achievement. Other than the Hill and Craft (2003) study, there has been a relative absence of investigation of the role of social competence as a mediator between early parenting and later academic performance. Hill and Craft (2003) hypothesized that

warm, nurturing parenting might help children become more sociable beings in the early years, and this would have an influence on how well they do in school. This study showed that the association between spanking in early childhood and lower levels of academic achievement in the third grade was due to the negative influence that spanking had on children's social skills in the third grade. Thus, the results suggest that spanking had a negative impact on academic achievement through its negative impact on the children's social skills. This research supported that of Hill and Craft in that this study looks at other aspects of social competence that might mediate academic achievement. The addition of social competence into the model examining the association between parenting and academic achievement explained an additional 10% of the variance in academic achievement in the third grade.

As mentioned previously, an alternative explanation for the role of social competence as a mediator between spanking and academic achievement could be the correlation of spanking frequency with other problems in the family functioning and home environment that adversely affect child outcomes. Although this study accounted for several factors that may be confounded the effect of spanking – including a mother's education, family structure, income, and maternal depression, many other aspects of parent-child interaction – e.g., the emotional tone of the household, the quality of parent-child attachment - were not available for assessment.

Behavior problems were not significant when considered with social competence. Thus, behavior problems did not mediate the associations with spanking and academic achievement. As mentioned previously, the lack of findings for behavior problems could

be due to the incorporation of both internalizing and externalizing behaviors into one overall behavior problems measure.

*Social competence as a mediator between curriculum and academic achievement*

As stated earlier, kindergarten curriculum had no association with academic achievement in the third grade.

*Background Variables*

Several of the variables controlled in this study were chosen due to the evidence that differences among these variables are associated with children's social and academic outcomes. For example, recent evidence indicates that boys are falling behind girls academically (Galley, 2002). Other research has shown that children from single parent families are at higher risk for academic problems than children from two-parent families (Huffman, Mehlinger, & Kerivan, 2000). The present research provides clear and consistent evidence that children from economically disadvantaged families and African American children achieve on average at a lower level of academic performance than do children from middle- or upper-income and white families. These differences related to the effects of gender, income and race on children's academic competencies exist in kindergarten and persist as children progress through school (Stipek, 2001).

Parents may contribute to the income, gender, and racial differences in academic achievement found in past research. In general, these findings showed that those children considered at risk for poor academic achievement and poor social competence were also less likely to be parented in ways that have been shown to protect children from academic problems. For example, in this study, boys were more likely to be spanked and received

lower levels of cognitive stimulation compared to girls. Children who were African American, who came from single parent families with low income, who had previous learning disabilities, and whose mothers were depressed and had low levels of education were less likely to receive the quality of parenting that is associated with high social competence and academic achievement.

Schools may also contribute to this achievement gap via systematic differences in the nature and quality of instruction that children with different family backgrounds have been shown to receive. Reardon's (2003) analysis of the findings from the data set used in this study, the Early Childhood Longitudinal Study, indicated that between-school differences accounted for 60-80% of the race and SES differences in progress rates of reading in the first grade. Specifically, white students' skills, as compared to African American and Hispanic students, grew at a faster rate. Although there were no significant academic outcome differences between children from more child-initiated and less academic-directed kindergarten programs in the current study, past research (Marcon, 2002) suggests that African American children and boys may benefit from a more child-initiated approach. According to Marcon (2002, p. 18), "the passivity required of children in an overly academic-directed approach may be especially difficult for young African American boys. In the preschool years, girls' early maturation may have allowed them to better process the verbal instruction typical of didactic, academically directed instruction, whereas boys' generally slower rate of neurological development may have required a more active, 'hands on' approach found in non-didactic, child-initiated early learning experiences."

In this study, Hispanic children were less likely than white children to be enrolled in child-initiated kindergarten programs. African American children were somewhat ($p < .10$) less likely to be enrolled in a child-initiated kindergarten program. Previous studies of education quality have shown similar results, in that ratings of the child-initiated climate were lower in kindergarten classrooms with a relatively high portion of low-income minority children (National Center for Education Statistics, 1999; Stipek, 2004). Analysis of curriculum and instruction designed specifically for disadvantaged students (i.e., schools serving a large population of low-income children, African American, and children with low achievement) shows that teachers serving these populations expect to stress basic skills more than higher level thinking and social skills, and to implement more academically directed teaching (Knapp & Turnbull, 1990). This approach derives from the idea that children must master the basics before they can benefit from problem-solving, critical thinking, or more socially oriented child-initiated approaches (Stipek, 2004).

Findings from this analysis suggest that social competence plays an important role in the differences in academic achievement found in past research based on gender, income, family type, and race. In this study, there were systematic differences in children's social competence based on these variables. For example, these findings showed that being African American, being a boy, having low family income, living in a single parent family, and having a mother with high levels of maternal depression and lower levels of education were associated with having lower social competence when compared to being white, being a female, having higher family income, having two parents, and having a mother with lower levels of depression and higher education.

Differences based on race, gender, and family structures are also worth noting. In regression 1, girls had significantly better academic achievement than boys. Children from two-parent families had significantly higher academic achievement. In addition, Hispanics and Asians had higher levels of academic achievement in the third grade when compared to white children. When social competence and behavior problems were taken into consideration, boys emerged with higher academic scores. There were no longer any significant differences between White children and Hispanic and Asian children on third grade academic scores. Finally, there were no longer any significant differences associated with family type. This indicates that improving social competence would reduce achievement disparities.

Future research needs to assess the effects of instructional methods on the learning of different groups of children using rigorous methods which allow strong causal conclusions. Random assignment is the most optimal strategy for ensuring that the assigned method impacts the outcomes of interest. However, random assignment experiments cannot be conducted until good hypotheses as to the types of factors that affect academic achievement can be developed and tested on large-scale populations. Further examination is also needed to investigate the associations found between teaching practices and children considered at risk for academic difficulties. The research presented here was unable to definitively test hypotheses about the effects of child-initiated and academic directed curricula on academic achievement.

*Programmatic and Policy Implications*

The results of this study have implications for parents, early childhood educators, program developers, and policy makers. First, addressing education gaps and gaps in

achievement requires programmatic approaches that bolster children's learning-related and interpersonal skills. Education for parents and teachers on the importance of social competence and methods for improving parent's and teacher's ability to foster these skills are also. Policies which increase the ability of parents to strengthen their relationships with their children need to be implemented at every ecological level.

This study breaks new ground by showing that corporal punishment hinders children's academic achievement by influencing children's interactions with peers and by affecting their skills in the classroom, such as the ability to concentrate, exert self-control, and follow rules. Professionals, childhood educators, parents, and policy makers need to educate the public about this evidence. Finally, greater attention should be paid to the value of positive parenting behaviors for fostering academic achievement in children.

*Limitations*

In interpreting these studies' findings, there are several limitations that should be addressed. First, it is important to remember that the design used in this research does not establish causality. Researchers in the larger study did not randomly assign children to a preschool model at the beginning. In addition, because the study is correlational, other intervening variables between kindergarten and third grade most likely contributed to these findings.

Second, the use of a preexisting data set limits the items and measures available for use in the analysis. The Early Childhood Longitudinal Study was not created to explore fully the differences between a child-initiated curriculum model and an academic directed model. Therefore, there are important pieces of information about characteristics of these types of classrooms that are not present. Information on the scope

of developmental goals, teachers' understanding of how children learn, both socially and academically, the quality of relationships between children and their teachers, as well as the amount of time allotted for social interactions, were not present in this data set. Research indicates that children's social and academic outcomes are influenced by these characteristics and that curriculum models vary along these dimensions. For example, several studies (Birch & Ladd, 1997; Birch & Ladd, 1998) suggest that the quality of the relationship between the teacher and student has a significant impact on social and academic achievement. The Stipek (2004) study showed that teachers in the child-initiated classrooms reported having closer relationships with their students than teachers in the academic-directed programs. If more information on teacher-child interactions were available, the research would provide a more vivid depiction of early childhood curricula and the influence on children's social and academic outcomes.

It should be noted that although the current study allowed for participation by both mothers and fathers, the overwhelming majority of the participants were mothers. In order to have a broader picture of parenting behaviors, future studies should find ways to examine the impact that the father's behavior has on children's outcomes.

Another limitation relates to the measure of spanking. This assessment did not take into consideration the severity of spanking nor the way that spanking was used. For example, spanking can be either instrumental (conducted when parents are calm and thoughtful) or impulsive (when the parent is distressed and angry). Thus, this measure was unable to make a distinction between discipline and abuse. In addition, no information was available on other punishments used by parents.

An additional limitation related to the behavior problems measure. Given the relatively few items on the separate internalizing and externalizing scales of the SRS, I choose to combine both of these scales into one behavior problem score. Grouping externalizing and internalizing behaviors into one score, however, limited my ability to examine the separate contributions of these constructs. In addition, the lack of findings for the relationship between behavior problems when considered with social competence could be due to the way that behavior problems were measured.

Finally, this study did not control for level of teacher education, nor did it assess the quality of relationships between the children and their teachers. As mentioned previously, the quality of a teacher's relationship with his or her students has an impact on children's academic and social outcomes. Research evidence also shows that teachers' years of education have a significant impact on children's academic achievement (Darling-Hammond & Youngs, 2002). For example, a meta-analysis (Greenwald, Hedges & Laine, 1996) examining school resources and their effect on children's school performance showed that, across studies, teachers' educational levels positively predicted student academic achievement.

*Directions for Future Research*

The current findings suggest that both learning-related and interpersonal skills play an important role in the development of academic achievement. Further research is needed to explore how specific parenting behaviors and early childhood curriculum affect the development of learning-related skills, as these skills appear to provide a foundation for learning in school. Specific focus should be on the examination of the link between parenting and curriculum and learning-related skills that are salient among children at

risk for academic problems, such as African American children. As mentioned previously, the research linking spanking with poor social and academic outcomes is less consistent among African American children.

As noted earlier, future research should also include a more comprehensive measure of academic achievement as well as curriculum. Such measures of academic achievement should include the ability to solve problems and think creatively and independently. Given the role of social competence in academic achievement, curriculum measures should include the amount of time spent in social activities, teachers' approach to social problems within and outside of the classroom, and the methods used for teaching academic skills such as reading and mathematics.

Finally, the finding that behavior problems were not consistently related to academic achievement needs further examination. They were related until measures of social competence were included. This study could have been strengthened by examining the impact of internalizing and externalizing behaviors separately. In addition, more research using measures that tap learning-related skills such as attention regulation might explain how child behavior problems hinder academic success.

*Conclusions*

This study adopted an ecological approach to examine parent and school level characteristics that promote children's social competence, reduce behavior problems, and foster academic achievement. Although the current study did not find a relationship between curriculum model and academic achievement, these findings demonstrate the importance of social competence in the development of academic achievement. Furthermore, the evidence of the mediating role of social competence in the relationship

between parenting and academic achievement contributes to the existing research. Clearly, if the crisis in education is to be addressed, the role of learning-related and interpersonal skills, social competence, must continue to be examined.

Appendix A: Control Variables

Individual Variables

*Preschool child's age*

I have recorded that (child) was born on (date of birth). Is that correct? /What is (child's) date of birth.

*Gender*

I have (child) recorded as a (male/female). Is that correct?

*Cognitive Achievement in Kindergarten*

Combined math and literacy score on the Academic Rating Scale in kindergarten. (See Appendix D).

Family Variables

*Depression*

I'm going to read some statements that may relate to how you have felt about yourself and your life during the past week. For each statement I read, please indicate how often in the past week you felt or behaved this way. There are no right or wrong answers.

| 1<br>Never | 2<br>Some of the time | 3<br>A moderate amount of the time | 4<br>Most of the time |
|---|---|---|---|

How often, during the past week have you…

1. Felt you were bothered by things that don't usually bother you?
2. Felt that you did not feel like eating, that your appetite was poor?
3. Felt that you could not shake off the blues even with help from your family?
4. Felt that you had trouble keeping your mind on what you were doing?
5. Felt depressed?
6. Felt that everything you did was an effort?
7. Felt fearful?
8. Felt that your sleep was restless?
9. Felt that you talked less than usual?
10. Felt lonely?
11. Felt sad?

12. Felt that you could not get going?

*Family Structure*

Do you have a spouse or a partner who lives in this household? Y/N?

*Maternal Education*

Now I have a few questions about education and job training. What was the highest grade or year of school that you have completed?

*Race/ethnicity:*

What is your race?

1. American Indian or Alaska Native
2. Asian
3. Black or African American
4. Native Hawaiian or other Pacific Islander
5. White
6. Another race (please specify)

*Income*

*The natural logarithm of income in U.S. dollars was included as a control for the socioeconomic status of the family.*

What is your annual household income?

School Variables

*Child's attendance in half vs. full day kindergarten*

This information was provided by the teacher.

Appendix B: Parenting Practices

Kindergarten Parent Questionnaire (Spring)
Warmth

Now I am going to read some statements. Please tell me whether each statement is completely true, mostly true, somewhat true, or not at all true.

| 1<br>Completely true | 2<br>Mostly true | 3<br>Somewhat true | 4<br>Not at all true |
|---|---|---|---|

1. (Child's name) and I often have warm, close times together.
2. Most of the time I feel that (child's name) likes me and wants to be near me.
3. I am usually too busy to joke and play around with (child's name).
4. Even when I am in a bad mood, I show (child's name) a lot of love.
5. By the end of a long day, I find it hard to be warm and loving toward (child's name).
6. I express affection by hugging, kissing, and holding (child's name).
7. Being a parent is harder than I thought it would be.
8. (child's name) does things that really bother me.
9. I find myself giving up more of my life to meet (child's name) needs than I ever expected.
10. I feel trapped by my responsibilities as a parent.
11. I often feel angry with (child's name).
12. (Child's name) seems harder to care for than most.
13. I find taking care of a young child more work than pleasure.

Discipline

Sometimes kids mind pretty well and sometimes they don't. About how many times, if any, in the past week have you spanked (child's name)?

Most children get angry with their parents from time to time. If (child's name) got so angry that (he/she) hit you, what would you do? Would you…

1. Spank (him/her),
2. have (him/her) take a time out,
3. hit (him/her) back,
4. talk to (him/her)about what (he/she) did wrong,
5. ignore it,
6. make (him/her) do some work around the house,
7. make fun of (him/her),
8. make (him/her) apologize,
9. take away privilege,
10. give a warning,
11. yell at (child's name) or threaten (him/her)?

Cognitive Stimulation

Now I'd like to talk to you about (child's name) activities with family members. In a typical week, how often do you or any other family members for the following things with the (child's name)?

| 1 | 2 | 3 | 4 | 7 | 9 |
|---|---|---|---|---|---|
| Not at all | Once or twice | 3 to 6 times | Every day | Refused | Don't know |

a. Read books to (child's name)?
b. Tell stories to (child's name)?
c. Build something or play with construction toys with (child's name)?
d. Play games or puzzles with (child's name)?

Appendix C: Curriculum

Kindergarten Teacher Questionnaire (Spring)

In a typical day, how much time do the children spend in the following activities? Do not include or recess breaks. If you teach more than one class, consider all classes when making responses.

| 1<br>No Time | 2<br>Half an hour or less | 3<br>About one hour | 4<br>About two hours | 5<br>Three or more hours |
|---|---|---|---|---|

a. Teacher-directed whole class activities?...

b. Teacher-directed small class activities?...

c. Teacher directed individual activities?...

d. Child-selected activities?...

Appendix D: Academic Rating Scale

Third Grade Teacher Questionnaire (Spring 2002)

You are asked to rate the child's skills, knowledge, and behaviors within two areas, language and literacy and mathematical thinking, based on your experience with this child. This is not a test and should not be administered directly to the child. Each question includes examples that are meant to help you think of the range of situations in which the child may demonstrate similar skills and behaviors. The examples do not exhaust all of the ways that a child may demonstrate what he/she knows or can do. The examples, do, however, indicate the level of proficiency a child should have reached in order to receive the highest rating. Some of these examples describe a very high level of performance (beyond typical standards) in order to be able to evaluate achievement levels of even the high performing students.

The following five-point scale is used for each of the questions. It reflects the degree to which a child has acquired and/or chooses to demonstrate the targeted skills, knowledge, and behaviors. Circle one for each item.

| 1 | 2 | 3 | 4 | 5 | N/A |
|---|---|---|---|---|---|
| Not yet | Beginning | In progress | Intermediate | Proficient | Not applicable |

Language and Literacy

This child…

1. **Conveys ideas clearly when speaking** – for example, presents a well-organized oral report, or uses precise language to express opinions, feelings, and ideas, or provides relevant answers to questions that summarize classmate's concerns…
2. **Uses various strategies to gain information** – for example, uses the index or table of contents to locate information, or uses encyclopedias or other reference books/media to learn about a topic…
3. **Reads fluently…**for example, easily reads words as part of meaningful phrases rather then word by word including words with three or more syllables, such as rambunctious, residential, genuinely, and pneumonia……
4. **Reads third grade books (fiction) independently with comprehension –** for example, relates why something happened in a story, or identifies emotions of characters in a story, or identifies a turning point in the story…

5. **Reads and comprehends expository text –** for example, after reading about how early colonists lived, creates a chart comparing life today with colonial life, or after reading a children's news story about pollution, identifies cause and effect relationships, or summarizes main ideas and the supporting details in a science or social studies selection….
6. **Composes multi-paragraph stories/reports** – for example, writes a story by developing and following an outline, or writes stories with a clear plot and distinct characters…
7. **Rereads and reflects on writing, making changes to clarify or elaborate**, for example, adds more adjectives and description, or includes additional details to increase clarity, or combines choppy sentences…
8. **Makes mechanical corrections when reviewing a rough draft** – for example, rereads a story and adds omitted words, or correct spelling and capitalization errors, or adds punctuation when necessary…
9. **Uses the computer for a variety of purposes** – for example, to write reports or stories formatting them correctly, or to use a database to retrieve information….

Mathematical Thinking

This child…

1. **Creates and extends patterns** – for example, extends an alternating pattern involving addition and subtraction (+3, -1, +3…or +5, -3, +5, …) or creates a complex visual pattern (aabc)…
2. **Uses a variety of strategies to solve math problems** – for example, adds 100 and then subtracts 4 when doing the mental math problem 467+96, or writes the algorithms or equations needed to solve a word problem, or orders steps sequentially in a multistep problem…
3. **Recognizes properties of shapes and relationships among shapes** – for example, recognizes that rectangles are composed of two right triangles, or demonstrates congruence by copying the exact size and shape of a pentagon onto a geoboard…

4. **Uses measuring tools accurately** – for example measures with rulers to the quarter-inch, or measures liquids to the nearest milliliter…
5. **Shows understanding of place value with whole numbers**- for example, correctly orders the whole numbers 19,321, 14,999, 9,900, and 20,101 from least to greatest, or correctly regroups when adding and subtracting….
6. **Makes reasonable estimates of quantities and checks answers** – for example, estimates the cost of a list of 8 different items and compares to actual cost, or estimates the perimeter of a bulletin board and then checks with a yardstick…
7. **Surveys, collects, and organizes data into simple graphs** – for example, charts temperature change over time, or makes a bar or line graph comparing the population in different cities of their state, or interprets a pictograph in which each symbol represents 5 people…
8. **Models, reads writes, and compares fractions** – for example, shows that 1/2 of the candy bar is 1/4 +1/4, or shows that 1/4 of a set of 12 is 3…
9. **Divides a 3 digit number by a 1 digit number** – for example, 348÷4 or 228÷ 6….

Appendix E: Regression 1

**Replicated Regression: AMREG1**

```
 Run completed on Monday, April 17, 2006. 05:09:52 PM

 Selection:            (  FILTER $ =1 )
 Observations:         7146
 Using 90 replicate weights

Adjusted Wald Test
F(18,73) = 132.003
p(F > f) = 0
```

```
 Dependent Variable: COMBARS5
R-Square  =   0.280
```

| Parameter Name | Estimate | Standard Error | t Statistic | p > \|t\| |
|---|---|---|---|---|
| Constant | 0.922 | 0.230 | 4.009 | 0.000 |
| F1 CHILD PROGRAM TYPE FROM FMS(AM/PM/AD) | 0.009 | 0.015 | 0.622 | 0.536 |
| CHILD COMPOSITE GENDER | 0.043 | 0.020 | 2.127 | 0.036 |
| P1 AGE (MONTHS) AT KINDERGARTEN ENTRY | 0.005 | 0.003 | 1.820 | 0.072 |
| Maternal Depression | -0.003 | 0.002 | -1.450 | 0.150 |
| Family Structure | 0.068 | 0.029 | 2.347 | 0.021 |
| Mother's Education Level | 0.048 | 0.008 | 6.244 | 0.000 |
| LEARNING PROBLEM DIAGNOSED | -0.255 | 0.099 | -2.580 | 0.012 |
| COMBARS2 | 0.407 | 0.015 | 26.636 | 0.000 |
| NEWINC | 0.114 | 0.024 | 4.740 | 0.000 |
| black | -0.055 | 0.039 | -1.412 | 0.161 |
| hispanic | 0.078 | 0.036 | 2.187 | 0.031 |
| asian | 0.149 | 0.064 | 2.329 | 0.022 |

| | | | | |
|---|---|---|---|---|
| other | 0.007 | 0.039 | 0.168 | 0.867 |
| Cognitive Stimulation | 0.009 | 0.005 | 1.825 | 0.071 |
| real spank | -0.069 | 0.030 | -2.327 | 0.022 |
| inductive discipline | 0.015 | 0.022 | 0.702 | 0.484 |
| Warmth | -0.002 | 0.003 | -0.860 | 0.392 |
| Child-Initiated | -0.017 | 0.016 | -1.043 | 0.300 |
| Root Mean Square Error | 0.652 | -- | -- | -- |

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Appendix F: Regression 2

**Regression 2**

*Run completed on Monday, April 17, 2006. 05:19:07 PM*

*Selection: ( FILTER $ =1 )*
*Observations: 7146*
*Using 90 replicate weights*

*Adjusted Wald Test*
*F(17,74) = 45.405*
*p(F > f) = 0*

*Dependent Variable: Learning Related Skills*
*R-Square = 0.177*

| Parameter Name | Estimate | Standard Error | t Statistic | p > \|t\| |
|---|---|---|---|---|
| Constant | 3.382 | 0.387 | 8.737 | 0.000 |
| F1 CHILD PROGRAM TYPE FROM FMS(AM/PM/AD) | -0.049 | 0.025 | -1.966 | 0.052 |
| CHILD COMPOSITE GENDER | 0.501 | 0.033 | 14.986 | 0.000 |
| P1 AGE (MONTHS) AT KINDERGARTEN ENTRY | 0.007 | 0.004 | 1.694 | 0.094 |
| Maternal Depression | -0.008 | 0.004 | -2.187 | 0.031 |
| Family Structure | 0.274 | 0.048 | 5.689 | 0.000 |
| Mother's Education Level | 0.061 | 0.012 | 5.237 | 0.000 |
| LEARNING PROBLEM DIAGNOSED | -0.460 | 0.132 | -3.477 | 0.001 |
| COMBARS2 | 0.289 | 0.027 | 10.804 | 0.000 |
| black | -0.291 | 0.078 | -3.739 | 0.000 |
| hispanic | 0.110 | 0.051 | 2.150 | 0.034 |
| asian | 0.317 | 0.094 | 3.383 | 0.001 |
| other | 0.019 | 0.080 | 0.239 | 0.812 |

| | | | | |
|---|---|---|---|---|
| Cognitive Stimulation | 0.001 | 0.009 | 0.107 | 0.915 |
| real spank | -0.229 | 0.038 | -5.946 | 0.000 |
| inductive discipline | -0.019 | 0.031 | -0.605 | 0.547 |
| Warmth | 0.006 | 0.004 | 1.418 | 0.160 |
| Child-Initiated | -0.019 | 0.031 | -0.616 | 0.540 |
| Root Mean Square Error | 1.076 | -- | -- | -- |

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Appendix G: Regression 3

**Replicated Regression: AMREG3**

```
 Run completed on Monday, April 17, 2006. 05:30:51 PM

 Selection:            (  FILTER $ =1 )
 Observations:         7146
 Using 90 replicate weights

Adjusted Wald Test
F(18,73) = 26.0981
p(F > f) = 0
```

```
 Dependent Variable: T5 INTERPERSONAL
R-Square  =   0.114
```

| Parameter Name | Estimate | Standard Error | t Statistic | p > \|t\| |
|---|---|---|---|---|
| Constant | 1.780 | 0.256 | 6.962 | 0.000 |
| F1 CHILD PROGRAM TYPE FROM FMS(AM/PM/AD) | -0.017 | 0.014 | -1.202 | 0.233 |
| CHILD COMPOSITE GENDER | 0.247 | 0.022 | 11.488 | 0.000 |
| P1 AGE (MONTHS) AT KINDERGARTEN ENTRY | 0.001 | 0.003 | 0.193 | 0.847 |
| Maternal Depression | -0.003 | 0.002 | -1.385 | 0.170 |
| Family Structure | 0.085 | 0.031 | 2.695 | 0.008 |
| Mother's Education Level | 0.025 | 0.007 | 3.512 | 0.001 |
| LEARNING PROBLEM DIAGNOSED | -0.213 | 0.069 | -3.087 | 0.003 |
| COMBARS2 | 0.103 | 0.016 | 6.410 | 0.000 |
| NEWINC | 0.052 | 0.035 | 1.480 | 0.142 |
| black | -0.116 | 0.039 | -2.993 | 0.004 |
| hispanic | 0.054 | 0.028 | 1.931 | 0.057 |
| asian | 0.108 | 0.057 | 1.892 | 0.062 |

| | | | | |
|---|---|---|---|---|
| other | -0.035 | 0.048 | -0.721 | 0.473 |
| Cognitive Stimulation | 0.000 | 0.006 | 0.001 | 0.999 |
| real spank | -0.093 | 0.024 | -3.821 | 0.000 |
| inductive discipline | -0.019 | 0.019 | -1.015 | 0.313 |
| Warmth | 0.007 | 0.002 | 3.033 | 0.003 |
| Child-Initiated | -0.005 | 0.018 | -0.266 | 0.791 |
| Root Mean Square Error | 0.613 | -- | -- | -- |

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Appendix H: Regression 4

**Replicated Regression: AMREG4**

```
 Run completed on Monday, April 17, 2006. 05:37:10 PM

 Selection:            (  FILTER $ =1 )
 Observations:         7146
 Using 90 replicate weights

Adjusted Wald Test
F(18,73) = 21.1662
p(F > f) = 0
```

```
 Dependent Variable: Behavior Problems
R-Square  =   0.124
```

| Parameter Name | Estimate | Standard Error | t Statistic | p > \|t\| |
|---|---|---|---|---|
| Constant | 5.366 | 0.307 | 17.459 | 0.000 |
| F1 CHILD PROGRAM TYPE FROM FMS(AM/PM/AD) | 0.074 | 0.022 | 3.350 | 0.001 |
| CHILD COMPOSITE GENDER | -0.251 | 0.025 | -10.195 | 0.000 |
| P1 AGE (MONTHS) AT KINDERGARTEN ENTRY | -0.010 | 0.003 | -3.074 | 0.003 |
| Maternal Depression | 0.002 | 0.003 | 0.737 | 0.463 |
| Family Structure | -0.158 | 0.045 | -3.475 | 0.001 |
| Mother's Education Level | 0.012 | 0.009 | 1.336 | 0.185 |
| LEARNING PROBLEM DIAGNOSED | 0.548 | 0.117 | 4.668 | 0.000 |
| NEWINC | -0.014 | 0.044 | -0.311 | 0.757 |
| COMBARS2 | -0.229 | 0.022 | -10.326 | 0.000 |
| black | 0.044 | 0.053 | 0.819 | 0.415 |
| hispanic | -0.024 | 0.045 | -0.525 | 0.601 |
| asian | -0.235 | 0.055 | -4.257 | 0.000 |

| | | | | |
|---|---|---|---|---|
| other | 0.075 | 0.063 | 1.191 | 0.237 |
| Cognitive Stimulation | -0.015 | 0.007 | -2.232 | 0.028 |
| real spank | 0.068 | 0.036 | 1.854 | 0.067 |
| inductive discipline | -0.020 | 0.023 | -0.867 | 0.388 |
| Warmth | -0.007 | 0.003 | -2.276 | 0.025 |
| Child-Initiated | 0.032 | 0.020 | 1.612 | 0.110 |
| Root Mean Square Error | 0.823 | -- | -- | -- |

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Appendix I: Regression 5

**Replicated Regression: AMREG5**

```
 Run completed on Monday, April 17, 2006. 05:43:39 PM

 Selection:            (  FILTER $ =1 )
 Observations:         7146
 Using 90 replicate weights

Adjusted Wald Test
F(14,77) = 235.981
p(F > f) = 0
```

```
 Dependent Variable: COMBARS5
R-Square  =   0.380
```

| Parameter Name | Estimate | Standard Error | t Statistic | p > \|t\| |
|---|---|---|---|---|
| Constant | -0.033 | 0.209 | -0.156 | 0.877 |
| F1 CHILD PROGRAM TYPE FROM FMS(AM/PM/AD) | 0.014 | 0.013 | 1.047 | 0.298 |
| CHILD COMPOSITE GENDER | -0.064 | 0.021 | -3.078 | 0.003 |
| P1 AGE (MONTHS) AT KINDERGARTEN ENTRY | 0.003 | 0.003 | 1.319 | 0.191 |
| Maternal Depression | -0.001 | 0.002 | -0.622 | 0.535 |
| Family Structure | 0.025 | 0.028 | 0.891 | 0.375 |
| Mother's Education Level | 0.039 | 0.007 | 5.726 | 0.000 |
| COMBARS2 | 0.357 | 0.016 | 22.982 | 0.000 |
| NEWINC | 0.082 | 0.025 | 3.260 | 0.002 |
| black | -0.006 | 0.035 | -0.177 | 0.860 |
| hispanic | 0.049 | 0.036 | 1.377 | 0.172 |
| asian | 0.090 | 0.064 | 1.408 | 0.163 |
| other | 0.004 | 0.036 | 0.109 | 0.914 |
| Social Competence | 0.155 | 0.008 | 18.721 | 0.000 |

| | | | | |
|---|---|---|---|---|
| Behavior Problems | 0.011 | 0.013 | 0.856 | 0.394 |
| Root Mean Square Error | 0.605 | -- | -- | -- |

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Appendix J: Regression 6

**Replicated Regression: AMREG6**

```
 Run completed on Monday, April 17, 2006. 05:53:38 PM

 Selection:            (  FILTER_$ =1 )
 Observations:         7146
 Using 90 replicate weights

Adjusted Wald Test
F(20,71) = 210.683
p(F > f) = 0
```

```
 Dependent Variable: COMBARS5
R-Square  =   0.382
```

| Parameter Name | Estimate | Standard Error | t Statistic | p > \|t\| |
|---|---|---|---|---|
| Constant | 0.063 | 0.237 | 0.266 | 0.791 |
| F1 CHILD PROGRAM TYPE FROM FMS(AM/PM/AD) | 0.018 | 0.014 | 1.274 | 0.206 |
| CHILD COMPOSITE GENDER | -0.069 | 0.021 | -3.287 | 0.001 |
| P1 AGE (MONTHS) AT KINDERGARTEN ENTRY | 0.004 | 0.003 | 1.552 | 0.124 |
| Maternal Depression | -0.002 | 0.002 | -0.831 | 0.408 |
| Family Structure | 0.026 | 0.028 | 0.926 | 0.357 |
| Mother's Education Level | 0.037 | 0.007 | 5.099 | 0.000 |
| LEARNING PROBLEM DIAGNOSED | -0.160 | 0.083 | -1.929 | 0.057 |
| COMBARS2 | 0.352 | 0.016 | 22.370 | 0.000 |
| NEWINC | 0.081 | 0.025 | 3.208 | 0.002 |
| black | 0.001 | 0.034 | 0.041 | 0.967 |
| hispanic | 0.048 | 0.035 | 1.359 | 0.178 |
| asian | 0.085 | 0.065 | 1.311 | 0.193 |

| | | | | |
|---|---|---|---|---|
| other | 0.004 | 0.035 | 0.129 | 0.897 |
| Behavior Problems | 0.015 | 0.013 | 1.161 | 0.249 |
| Child-Initiated | -0.014 | 0.014 | -0.963 | 0.338 |
| Social Competence | 0.154 | 0.008 | 19.081 | 0.000 |
| real spank | -0.022 | 0.025 | -0.871 | 0.386 |
| inductive discipline | 0.022 | 0.021 | 1.014 | 0.313 |
| Warmth | -0.004 | 0.002 | -1.628 | 0.107 |
| Cognitive Stimulation | 0.009 | 0.005 | 1.862 | 0.066 |
| Root Mean Square Error | 0.604 | -- | -- | -- |

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Appendix K: Regression 7

**Replicated Regression: AMREG7**

```
 Run completed on Monday, April 17, 2006. 06:04:30 PM

 Selection:            (  FILTER_$ =1 )
 Observations:         7146
 Using 90 replicate weights

Adjusted Wald Test
F(20,71) = 213.286
p(F > f) = 0
```

```
 Dependent Variable: COMBARS5
R-Square  =   0.397
```

| Parameter Name | Estimate | Standard Error | t Statistic | p > \|t\| |
|---|---|---|---|---|
| Constant | 0.009 | 0.238 | 0.040 | 0.968 |
| F1 CHILD PROGRAM TYPE FROM FMS(AM/PM/AD) | 0.019 | 0.014 | 1.382 | 0.170 |
| CHILD COMPOSITE GENDER | -0.077 | 0.021 | -3.596 | 0.001 |
| P1 AGE (MONTHS) AT KINDERGARTEN ENTRY | 0.003 | 0.002 | 1.369 | 0.174 |
| Maternal Depression | -0.002 | 0.002 | -0.714 | 0.477 |
| Family Structure | 0.021 | 0.028 | 0.737 | 0.463 |
| LEARNING PROBLEM DIAGNOSED | -0.153 | 0.081 | -1.879 | 0.063 |
| NEWINC | 0.074 | 0.025 | 3.006 | 0.003 |
| COMBARS2 | 0.343 | 0.016 | 22.026 | 0.000 |
| black | 0.007 | 0.033 | 0.205 | 0.838 |
| hispanic | 0.043 | 0.035 | 1.233 | 0.221 |
| asian | 0.071 | 0.063 | 1.135 | 0.260 |
| other | -0.005 | 0.035 | -0.143 | 0.886 |
| Behavior Problems | 0.019 | 0.013 | 1.522 | 0.131 |

| | | | | |
|---|---|---|---|---|
| Learning Related Skills | 0.248 | 0.012 | 21.388 | 0.000 |
| real spank | -0.016 | 0.025 | -0.618 | 0.538 |
| Child-Initiated | -0.013 | 0.014 | -0.923 | 0.358 |
| Warmth | -0.003 | 0.002 | -1.404 | 0.164 |
| Cognitive Stimulation | 0.009 | 0.005 | 1.851 | 0.068 |
| inductive discipline | 0.020 | 0.021 | 0.970 | 0.334 |
| Mother's Education Level | 0.036 | 0.007 | 5.156 | 0.000 |
| Root Mean Square Error | 0.596 | -- | -- | -- |

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Appendix L: Regression 8

**Replicated Regression: AM REG 8**

```
 Run completed on Tuesday, April 18, 2006. 08:46:57 PM

 Selection:            (  FILTER $ =1 )
 Observations:         7146
 Using 90 replicate weights

Adjusted Wald Test
F(20,71) = 173.268
p(F > f) = 0
```

```
 Dependent Variable: COMBARS5
R-Square  =   0.337
```

| Parameter Name | Estimate | Standard Error | t Statistic | p > \|t\| |
|---|---|---|---|---|
| Constant | 0.477 | 0.235 | 2.028 | 0.046 |
| F1 CHILD PROGRAM TYPE FROM FMS(AM/PM/AD) | 0.015 | 0.014 | 1.076 | 0.285 |
| CHILD COMPOSITE GENDER | -0.033 | 0.020 | -1.635 | 0.105 |
| P1 AGE (MONTHS) AT KINDERGARTEN ENTRY | 0.005 | 0.003 | 1.756 | 0.083 |
| Maternal Depression | -0.003 | 0.002 | -1.137 | 0.258 |
| Family Structure | 0.040 | 0.028 | 1.433 | 0.155 |
| Mother's Education Level | 0.041 | 0.007 | 5.414 | 0.000 |
| LEARNING PROBLEM DIAGNOSED | -0.184 | 0.089 | -2.061 | 0.042 |
| black | -0.020 | 0.037 | -0.538 | 0.592 |
| hispanic | 0.062 | 0.036 | 1.714 | 0.090 |
| asian | 0.114 | 0.067 | 1.708 | 0.091 |
| other | 0.018 | 0.035 | 0.502 | 0.617 |
| NEWINC | 0.098 | 0.025 | 3.872 | 0.000 |

| | | | | |
|---|---|---|---|---|
| COMBARS2 | 0.374 | 0.016 | 23.578 | 0.000 |
| Cognitive Stimulation | 0.009 | 0.005 | 1.812 | 0.073 |
| real spank | -0.041 | 0.026 | -1.592 | 0.115 |
| Warmth | -0.004 | 0.003 | -1.703 | 0.092 |
| inductive discipline | 0.021 | 0.022 | 0.955 | 0.342 |
| Child-Initiated | -0.015 | 0.015 | -0.992 | 0.324 |
| Behavior Problems | -0.015 | 0.013 | -1.101 | 0.274 |
| T5 INTERPERSONAL | 0.294 | 0.021 | 14.177 | 0.000 |
| Root Mean Square Error | 0.625 | -- | -- | -- |

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Appendix M: Regression 9

**Replicated Regression: AM REG 9**

```
 Run completed on Tuesday, April 18, 2006. 08:53:42 PM

 Selection:            (  FILTER_$ =1 )
 Observations:         7146
 Using 90 replicate weights

Adjusted Wald Test
F(19,72) = 117.087
p(F > f) = 0
```

```
 Dependent Variable: COMBARS5
R-Square  =   0.286
```

| Parameter Name | Estimate | Standard Error | t Statistic | p > \|t\| |
|---|---|---|---|---|
| Constant | 1.312 | 0.246 | 5.325 | 0.000 |
| F1 CHILD PROGRAM TYPE FROM FMS(AM/PM/AD) | 0.015 | 0.015 | 0.999 | 0.320 |
| CHILD COMPOSITE GENDER | 0.025 | 0.021 | 1.212 | 0.229 |
| P1 AGE (MONTHS) AT KINDERGARTEN ENTRY | 0.004 | 0.003 | 1.552 | 0.124 |
| Maternal Depression | -0.003 | 0.002 | -1.400 | 0.165 |
| Family Structure | 0.056 | 0.030 | 1.877 | 0.064 |
| Mother's Education Level | 0.049 | 0.008 | 6.340 | 0.000 |
| LEARNING PROBLEM DIAGNOSED | -0.215 | 0.096 | -2.234 | 0.028 |
| black | -0.051 | 0.039 | -1.332 | 0.186 |
| hispanic | 0.076 | 0.036 | 2.117 | 0.037 |
| asian | 0.132 | 0.066 | 1.998 | 0.049 |
| other | 0.012 | 0.038 | 0.314 | 0.754 |
| NEWINC | 0.113 | 0.024 | 4.688 | 0.000 |

| | | | | |
|---|---|---|---|---|
| COMBARS2 | 0.391 | 0.016 | 24.903 | 0.000 |
| Cognitive Stimulation | 0.008 | 0.005 | 1.627 | 0.107 |
| real spank | -0.064 | 0.029 | -2.179 | 0.032 |
| Warmth | -0.003 | 0.003 | -1.040 | 0.301 |
| inductive discipline | 0.014 | 0.022 | 0.629 | 0.531 |
| Behavior Problems | -0.073 | 0.013 | -5.549 | 0.000 |
| Child-Initiated | -0.014 | 0.016 | -0.883 | 0.380 |
| Root Mean Square Error | 0.649 | -- | -- | -- |

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References

Agostin, T. M., & Bain, S. K. (1997). Predicting early school success with developmental and social skills screeners. *Psychology in the Schools, 34*(3), 219-228.

Alexander, K., & Entwisle, D. (1988). Achievement in the first 2 years of school: Patterns and processes. *Monographs for Society of Research in Child Development, 53*(24), 1-57.

Alexander, K., Entwisle, D., & Dauber, S. (1993). First-grade classroom behavior: Its short-and long-term consequences for school performance.

Almon, J. (2003). The vital role of play in early childhood education. In *4-19*. *Research Bulletin, 87*(24). Retrieved from http://www.waldorflibrary.org/Journal_Articles/RB802.pdf.

American Academy of Pediatrics. (1998). Guidance for effective discipline. *Pediatrics*, 101, 723-728.

Anderson, S., & Messick, S. (1974). Social competency in young children. *Developmental Psychology, 105*(24), 282-293.

Arias, L., & Pape, K. (1999). Psychological abuse: Implications for adjustment and commitment to leave violent partners. *Violence and Victims, 14,* 55-67.

August, G., & Garfinkel, B. (1990). Comorbidity of ADHD and reading disability among clinic-referred children. *Journal of Abnormal Child Psychology, 18,* 29-45.

Baumrind, D. (1971). Current patterns of parental authority. *Developmental Psychology Monographs, 4,* 1-103.

Baumrind, D., Larzelere, R.E., & Cowan, P.A. (2002). Ordinary physical punishment: Is it harmful? Comment on Gershoff (2002). *Psychological Bulletin*, 128 (4), 590-595.

Baumrind, D. (1997). Necessary distinctions. *Psychological Inquiry*, 8, 176-182.

Birch, S., & Ladd, G. (1997). The teacher-child relationship and children's early school adjustment. *Journal of School Psychology, 35,* 61-79.

Birch, S., & Ladd, G. (1998). Children's interpersonal behaviors and the teacher-child relationship. *Developmental Psychology, 343*, 934-946.

Blaustein, M. (2005, July). Developmentally appropriate practice in 2005: Updates from the field. *Beyond the Journal.* Retrieved from National Association for the Education of Young Children: http://journal.naeyc.org/btj.

Block, J., & Block, J. (1980). The role of ego-control and ego-resiliency in the organization of behavior. In W. Collins (Ed.), *The Minnesota Symposia on Child Psychology:Vol.13. Development of cognition, affect, and social relations* (pp. 39-101). Hillsdale, NJ: Erlbaum.

Bronfenbrenner, U. (1986). Ecology of the family as context for human development: Research Perspectives. *Developmental Psychology, 22*(6), 723-742.

Bronfenbrenner, U. (1990). *Rebuilding the nest: A new commitment to the American family*: *Discovering what families do*. Retrieved from Family Service America: http://www.montana.edu/www4h/process.html.

Bronson, M. (1996). *Manual for the Bronson Social and Task Skill Profile (teacher version).* Chestnut Hill, MA: Boston College.

Bronson, M., Tivnan, M., & Seppanen, P. (1995). Relations between teacher and classroom activity variables and the classroom behaviors of prekindergarten children in Chapter 1 funded programs. *Journal of Applied Developmental Psychology, 16,* 253-282.

Burleson, B. (1983). Interactional antecedents of social reasoning development: Interpreting the effects of parent discipline on children. In D. Zarefsky, M. Sillars & J. Rhodes (Eds.), *Argument in transition: Proceedings of the third summer conference on argumentation* (pp. 597-610). Annandale, VA: Speech Communication Association.

Burts, D. C., Hart. Craig H., Charlesworth, R., & Lirk, L. (1990). A comparison of frequencies of stress behaviors observed in kindergarten children in classrooms with Developmentally appropriate instructional practices. *Early Childhood Research Quarterly, 5*(3), 407-423.

Byrd, R., & Weitzman, M. (1994). Predictors of early grade retention among children in the United States. *Pediatrics, 93*(3), 481-487.

Campbell, S., & von Stauffenberg, C. (2005, October 14). *Child characteristics and family processes that predict behavioral readiness for school.* Presented at the National Symposium on Family Issues, Pennsylvania State University.

Caprara, G., Barbaraneli, C., Pastorelli, C., Bandura, A., & Zimbardo, P. (2000, July). Prosocial foundations of children's academic achievement. *Psychological Science, 113*(4), 302-306.

Caprara, G., & Pastorelli, C. (1993). Early emotional instability, prosocial behavior and aggression: Some methodological aspects. *European Journal of Personality, 7,* 19-36.

Clark, C., Prior, M., & Kinsella, G. (2002). The relationship between executive function abilities, adaptive behavior, and academic achievement in children with externalizing behavior. *Journal of Child Psychology and Psychiatry, 343*(6), 785-796.

Coates, D., & Lewis, M. (1984). Early mother-infant interaction and infant cognitive status as predictors of school performance and cognitive behavior in six-year-olds. *Child Development, 55*, 1219-1230.

Cooper, D., & Farran, D. (1988). Behavioral risk factors in kindergarten. *Early Childhood Research Quarterly, 3,* 1-19.

Cooper, D., & Farran, D. (1991). *The Cooper-Farran behavioral rating scales.* Brandon, VT: Clinical Psychology Publishing Co., Inc.

Cooper, D., & Spence, D. (1988). A novel methodology for the study of children at risk for school failure. *Journal of Special Education, 22*(2), 186-198.

Darling, N., & Steinberg, L. (1993). Parenting style as context: An integrative model. *Psychological Bulletin, 113*(3), 487-496.

Darling-Hammond, L., & Youngs, P. (2002). Defining "highly qualified" teachers: What does "scientifically-based research" actually tell us? *Educational Researcher, 31*(9), 13-35.

Denham, S., Renwick, S., & Holt, R. (1991). Working and playing together: Prediction of preschool social-emotional competence from mother-child interaction. *Child Development, 62,* 242-249.

DeVires, R., Reese-Learned, H., & Morgan, P. (1991). Sociomoral development in direct-instruction, eclectic, and constructivist kindergartens: A study of children's enacted interpersonal understanding. *Early Childhood Research Quarterly, 69*(4), 473-517.

Dishion, T. (1990). The family ecology of boys' peer relations in middle childhood. *Child Development, 61*, 874- 892.

Dodge, K., Petit, G., & Bates, J. (1994). Socialization mediators of the relationships between socioeconomic status and child conduct problems. *Child Development, 65*(2), 649-665.

Eamon, M. (2005, April). Social-demographic, school, neighborhood, and parenting influences on the academic achievement of Latino young adolescents. *Journal of Youth and Adolescence, 34*(24), 163-174.

Edelman, M. (1987). *Families in peril: An agenda for social change.* Cambridge, MA: Harvard University Press.

Eisenberg, N., & Fabes, R. (1992). Emotion, regulation, and the development of social competence. In *Review of personality and social psychology* (pp. 119-150). Emotion and social behavior, vol. 14). Newbury Park, CA: Sage.

Eisenberg, N., Guthrie, K., Fabes, R., Shepard, S., Losoya, S., Murphy, B. et al. (2000, September/October). Prediction of elementary school children's externalizing

behavior problems from attentional and behavioral regulation and negative emotionality. *Child Development, 71*(5), 1367-1382.

Elkind, D. (2001). *The hurried child: Growing up too fast too soon.* Reading, MA: Addison-Wesley.

Entwisle, D. (1995). The role of schools in sustaining early childhood program benefits. *Future Child, 58,* 133-144.

Fantuzzo, J., Davis, G., & Ginsberg, M.D. (1995). Effects of parent involvement in isolation or in combination with peer tutoring on student self-concept and mathematics achievement. *Journal of Educational Psychology, 87,* 272-281.

Fazio, B., Naremore, R., & Connell, P. (1996). Tracking children from poverty at risk for specific language impairment: A 3-year longitudinal study. *Journal for Speech and Hearing Research, 39,* 611-634.

Flower, M., & Cross, A. (1986). Preschool risk factors as predictors of early school performance. *Journal of Developmental and Behavioral Psychiatry, 75*(4), 237-241.

Foulks, B., & Morrow, R. (1989). Academic survivor skills for the young child at risk for school failure. *Journal of Educational Research, 82,* 158-165.

Fowler, S., Schwartz, I., & Atwater, J. (1991). Perspectives on the transition from prekindergarten to kindergarten from children with disabilities and their families. *Exceptional Child, 58*(24), 136-145.

Frick, P., Kamohaus, R., Lahey, B., Loeber, R., Christ, M., Hart, E. et al. (1991). Academic underachievement and the disruptive behavior disorders. *Journal of Consulting and Clinical Psychology, 59,* 289-294.

Galley, M. Research: Boys to men (2002). *Education Week.* Available online at http://www.nochildleftbehind.gov.

Green, L., Francis, J., & Elliott, S. (1988). Children's learning skills at the infant and junior stages: A follow-up study. *British Journal of Educational Psychology, 58,* 120-126.

Greenwald, R., Hedges, L., & Laine, R. (1996). The effect of school resources on student achievement. *Review of Educational Research, 66*(307-329), 361-396.

Gresham, F., & Elliott, S. (1990). *Social Skills Rating System Manual.* Circle Pines, MN: American Guidance Service.

Griffin, E., & Morrison, F. (1997). The unique contribution of home literacy environment to differences in early literacy skills. *Early Child Development and Care, 127-128,* 233-243.

Grolnick, W., & Slowiaczek, M. (1994). Parents' involvement in children's schooling: A multidimensional model. *Child Development, 65,* 237-252.

Grusec, J., & Goodnow, J. (1994). The impact of parental discipline methods on child's internalization of values: A reconceptualization of current points of view. *Developmental Psychology, 30,* 1-19.

Guidubaldi, J., & Perry, J. (1984). Divorce, socioeconomic status, and children's cognitive-social competence at school entry. *American Journal of Orthopsychiatry, 54*(3), 459-468.

Gunnoe, M., & Mariner, C. (1997). Toward a developmental-contextual model of the effects of parental spanking on children's aggression. *Archives in Pediatric Adolescent Medicine, 151,* 768-775.

Hammen, C. (2002). Context of stress in families of children with depressed parents. In S. Goodman & I. Gotleib (Eds.), *Children of depressed parents: Mechanisms of risk and implications for treatment* (pp. 175-199). Washington, DC: American Psychological Association.

Hart, B., & Risley, T., R. (1992). American parenting of language-learning children: Persisting differences in family -child interactions observed in natural home environments. *Developmental Psychology, 28,* 1096-1105.

Hart, C., DeWolf, D., & Burnts, D. (1993). Parental disciplinary strategies and preschoolers' play behavior in playground settings. Hart, C. (Ed.), (pp. 271-313). Albany, NY: State University of New York Press.

Hart, C., DeWolf, D., Wozniak, P., & Burts, D. (1992). Maternal and paternal disciplinary styles: Relations with preschoolers' playground behavioral orientations and peer status. *Child Development, 63,* 879-892.

Hart, C., Newell, L., & Olsen, S. (2003). Parenting skills and social-communicative competence in childhood. In J. Grenne & B. Burleson (Eds.), *Handbook of communication and social interaction skills* (pp. 653-797). Mahwah, NJ: Lawrence Earlbaum Associates.

Healy, J. (2004). *Your child's growing mind.* New York, NY: Broadway Books.

Henry, G., Gordon, C., Henderson, L., & Ponder, B. (2003). *Georgia Pre-K Longitudinal Study Final Report 1996-2001* (Andrew Young School of Policy Studies). Atlanta, GA: Georgia State University.

Henry, G., Henderson, L., Ponder, B., Gordon, C., Mashburn, A., & Rickman, D. (2004). *Report of findings from the Early Childhood Study: 2001-2002* (Andrew Young School of Policy Studies). Atlanta, GA: Georgia State University.

Hill, N., & Craft, S. (2003). Parent-school involvement and school performance: Mediated pathways among socioeconomically comparable African American and Euro-American Families. *Journal of Educational Psychology, 95*(115), 74-84.

Hinshaw, S. (1992). Externalizing behavior problems and academic underachievement in childhood and adolescence: Causal relationships and underlying mechanisms. *Psychological Bulletin, 111*(115), 127-155.

Hirsh-Pasek, K., & Golinkoff, R. M. (2003). *Einstein never used flash cards: How our children really learn- and why they need to play more and memorize less.* United States of America: Holtzbrinck Publishers.

Howes, C., & Smith, E. (1995). Relations among child care quality teacher behavior, children's play activities, emotional security, and cognitive activity in child care. *Early Childhood Research Quarterly, 105,* 381-404.

Huffman, L., Mehlinger, S., & Kerivan, A. (2000). Research on risk factors for early school problems and selected federal policies affecting children's social and emotional development and their readiness for school. *The Child and Mental Health Foundation and Agencies Network.* Retrieved from http://www/nimh.gov/childp/goodstart.cmf.

Hyson, M., Hirsh-Pasek, K., & Rescorla, L. (1990). The classroom practices inventory: An observation instrument based on NAEYC's guidelines for developmentally

appropriate practices for 4- and 5-year-old children. *Early Childhood Research Quarterly, 58,* 475-494.

Izzo, C., Weissberg, R., Kasprow, W., & Fendrich, M. (1999). A longitudinal assessment of teacher perceptions of parent involvement in children's education and school performance. *American Journal of Community Psychology, 27*(6), 817-839.

Jackson, Y., & Frick, P. (1998). Negative life events and the adjustment of school-age children: Testing protective models. *Journal of Clinical Child Psychology, 27*(4), 370-380.

Jacobson, L. (2004). Pre-K standards said to slight social, emotional skills. *Education Week, 23*(42), 13.

James, C. (1997). Coping with a new society: The unique psychosocial problems of immigrant youth. *Journal of School Health, 67*, 98-102.

Jimmerson, S., Egeland, B., Stroufe, A., & Carlson, B. (2000). A prospective longitudinal study of high school dropouts examining multiple predictors across development. *Journal of School Psychology, 38,* 525-549.

Jones, M. (1990). The effect of age at school entry on reading achievement scores among South Carolina students. *Remedial and Special Education, 113*(24), 56-62.

Kennedy, J. (1992). Relationship of maternal beliefs and childrearing strategies to social competence in preschool children. *Child Study Journal, 22,* 39-60.

Knapp, M., & Turnbull, B. (1990). *Better schooling for the children of poverty: Alternatives to conventional wisdom,Vol.1,summary*.

Kochanska, G., Aksan, N., Knaack, A., & Rhines, H. (2004, July/August). Maternal parenting and children's conscience: Early security as moderator. *Child Development, 75*(4), 1229-1242.

Kochanska, G., Aksan, N., & Nichols, K. (2003). Maternal power assertion in discipline and moral discourse contexts: Commonalities, differences and implications for children's moral conduct and cognition. *Developmental Psychology Monographs, 39,* 949-963.

Kuczynski, L., & Kochanska, G. (1990). Development of children's non-compliance strategies from toddlerhood to age 5. *Developmental Psychology, 26,* 398-408.

Kupersmidt, J., & Coie, J. (1990). Preadolescent peer status, aggression, and school adjustment as predictors of externalizing problems in adolescence. *Child Development, 61,* 1350-1362.

Ladd, G. (1990). Having friends, keeping friends, making friends, and being liked by peers in the classrooms: Predictors of children's early school adjustment? *Child Development, 61,* 1081-1100.

Ladd, G., Birch, S., & Buhs, E. (1999). Children's social and scholastic lives in kindergarten: Related spheres of influence. *Child Development, 70,* 1373-1400.

Ladd, G., Kochenderfer, B., & Coleman, C. (1996). Friendship quality as a predictor of young children's early school adjustment. *Child Development, 67,* 1103-1118.

Landry, S. H., Smith, K. E., Miller-Loncar, C., & Swank, P. (1998). The relation of change in maternal interactive styles with infants' developing social competence across the first three years of life. *Child Development, 69,* 105-123.

Lazar, I., Darlington, R., Murray, H., Royce, J., & Snipper, A. (1982). Lasting effects of early education: A report from the Consortium for Longitudinal Studies. *Monographs for Society of Research in Child Development, 47*(2-3, Serial No. 195), EJ 266-057.

Larzelere, R.E. (2000). Child outcomes to nonabusive and customary physical punishment by parents: An updated literature review. *Clinical Child and Family Psychology Review. 3*(4), 199-221.

Maccoby, E., & Martin, J. (1983). Socialization in the context of the family: Parent-child Interaction. In P. Mussen & E. Hetherington (Eds.), *Handbook of Child Psychology* (pp. 1-101). New York: Wiley.

Marcon, R. A. (2002, Spring). Moving up the grades: Relationship between preschool model and later school success. *Early Childhood Research and Practice, 4*(1).

Marcon, R. (1999). Differential impact of preschool models on development and early learning of inner-city children: A three cohort study. *Developmental Psychology Monographs, 35*(2), 358-375.

McClelland, M., & Hansen, E. (2001, June). *A follow-up of children with poor work-related skills: Do problems persist at the end of elementary school?*. Presented at the Society for the Scientific Study of Reading, Boulder, CO.

McClelland, M., & Morrison, F. (2003). The emergence of learning-related social skills in preschool children. *Early Childhood Research Quarterly, 18,* 206-224.

McClelland, M., Morrison, F., & Holmes, D. (2000). Children at-risk for early learning related social skills. *Early Childhood Research Quarterly, 15, 307-329.*

McCord, J. (1991). Family relationships, juvenile delinquency, and adult criminality. *Criminology, 29,* 397-417.

McLoyd, V. (1998). Socioeconomic disadvantage and child development. *American Psychologist, 53*(24), 185-204.

Meisels, S. (1994). Designing meaningful measurements for early childhood. In B. Mallory & New R.S. (Eds.), *Diversity in early childhood education: A call for more inclusive theory, practice, and policy* (pp. 205-225). New York: Teachers College Press.

Meisels, S., Atkins-Burnett, S., & Nicholson, J. (1995). *Assessment of social competence, adaptive behaviors, and approaches to learning with young children.* Ann Arbor, MI: University of Michigan Assessment Projects.

Meisels, S., Atkins-Burnett, S., & Nicholson, J. (1996, August). Assessment of social competence, adaptive behaviors, and approaches to learning with young children. [Working Paper No. 96-18]. Washington, DC.: U.S. Department of Education, National Center for Education Statistics.

Meisels, S., & Perry, N. (1996). How accurate are teachers' judgments of students' academic performance? [Working Paper No. 96-08]. Washington, DC.: U.S. Department of Education, National Center of Educational Statistics.

Miles, S., & Stipek, D. (2006, January/February). Contemporaneous and longitudinal associations between social behavior and literacy achievement in a sample of low-income elementary school children. *Child Development, 77*(115), 103-117.

Miller-Loncar, C., Landry, S., Smith, K., & Swank, P. (2000). The influence of complexity of maternal thoughts on sensitive parenting and children's social responsiveness. *Journal of Applied Developmental Psychology, 21,* 335-356.

Minuchin, P., & Shapiro, E. (1983). The school as a context for social development. In P. Mussen (Ed.), *Handbook of Child Psychology Vol. IV* (pp. 197-274). New York: Wiley.

National Center for Education Statistics (Department of Education). (1999). What happens in the classrooms? Instructional practices in elementary and secondary schools, 1994-1995. In *#NCES 1999-348.* Washington, DC: US Department of Education.

Petit, G., Bates, J., & Dodge, K. (1997, October). Supportive parenting, ecological context, and children's adjustment: A seven-year longitudinal study. *Child Development, 68*(5), 908-923.

Plomin, R. (1995). Molecular genetics and psychology. *Psychological Science, 44,* 114-117.

Pollard, D. (1993). Gender, achievement, and African-American students' perceptions of their school experience. *Educational Psychologist, 28*(4), 341-356.

Preacher, K. & Hayes, A. (2004). SPSS and SAS procedures for estimating indirect effects in simple mediation models. *Behavior Research Methods, Instruments, and Computers*, 36, 717-731.

Raver, C. (2002). Emotions Matter: Making the case for the role of young children's emotional development for early school readiness (L. Sherrod ed.) [Special issue].

*Social Policy Report, 16*(3), 1-20. University of Michigan: Society for Research in Child Development.

Raver, C. (2004). Placing emotional self-regulation in sociocultural and socioeconomic contexts. *Child Development*, *75*, 346-353.

Raver, C., & Zigler, E. (1997). Focus section: New perspectives in Head Start. *Early Childhood Research Quarterly, 12,* 363-385.

Raviv, T., Kessenich, M., & Morrison, F. (2004). A mediational model of the association between socioeconomic status and three-year-old abilities: The role of parenting factors. *Early Childhood Research Quarterly, 19,* 528-547.

Reardon, S. (2003). *Sources of educational inequality: The growth of racial/ethnic and socioeconomic test score gaps in kindergarten and first grade* (Population Research Institute). University Park, PA: The Pennsylvania State University.

Rescorla, L., Hyson, M., & Hirsh-Pasek, K. (Editors). (1991). *Academic instruction in early childhood.* (Vol. 53). San Francisco: Jossey-Bass.

Reynolds, A. (1989). A structural model of first grade outcomes for an urban, low socioeconomic status, minority population. *Journal of Educational Psychology, 81,* 594-603.

Reynolds, A. (1991). Early schooling of children at risk. *American Educational Research Journal, 28,* 392-422.

Richardson, S., Koller, H., & Katz, M. (1986). Factors leading to differences in school performances of girls and boys. *Journal of Developmental and Behavioral Pediatrics, 7*(1), 49-55.

Rimm-Kauffman, S., Pianta, R., & Cox, M. (2000). Teachers' judgments of problems in the transition to Kindergarten. *Early Childhood Research Quarterly*, 15, 147-166.

Rubin, K., & Rose-Krasnor, L. (1992). *Interpersonal problem solving and social competence in children* (V. Van Hasselt & M. Herson, Eds.) (Handbook of social development, pp. 283-323). New York: Plenum Press.

Schaeffer, E.S., & Edgerton, M. (1983). Unified model for academic competence, social adjustment, and psychopathology. Paper presented at the Annual Convention of the American Psychological Association. (ERIC document Reproduction Service No. ED 235 895).

Schweinhart, L. J., & Weikart, D. P. (1997). The High/Scope Preschool curriculum comparison study through age 23. *Early Childhood Research Quarterly, 12,* 117-143.

Schweinhart, L. J., Weikart, D. P., & Larner, M. (1986). Consequences of three preschool curriculum models through age 15. *Early Childhood Research Quarterly, 1*(1), 15-45.

Scott-Little, C., Kagan, S., & Frelow, V. (2004). *Inside the content: The breadth and depth of early learning standards* (SERVE). Greensboro, N.C.

Shepard, L., & Smith, M. (1986). Escalating academic demand in kindergarten: Counterproductive policies. *The Elementary School Journal, 89*, 135-145.

Shields, A., Dickstein, S., Seifer, R., L., Magee, K., & Spritz, B. (2001). Emotional competence and early school adjustment: A study of preschoolers at risk. *Early Education and Development, 127-128,* 73-96.

Sinclair, D., & Murray, L. (1998, Effects of postnatal depression on children's adjustment to school: Teacher's reports). *British Journal of Psychiatry, 172,* 58-63.

Slade, E., & Wissow, L. (2004). Spanking in early childhood and later behavior problems: A prospective study of infants and young toddlers. *Pediatrics, 113*(5), 1321-1330.

Smith, K., Landry, S., & Swank, P. (2000). The influence of early patterns of positive parenting on children's preschool outcomes. *Early Education and Development, 11,* 147-169.

Stams, G.J.M., Juffer, F., & Van IJzendoorm, M.H. (2002). Maternal sensitivity, infant attachment, and temperament in early childhood predict adjustment in middle childhood: The case of adopted children and their biologically unrelated parents. *Developmental Psychology*, 38, 806-821.

Stevenson, H., Chen, C., & Uttal, D. (1990). Beliefs and achievement: A study of Black, White, and Hispanic children. *Child Development, 61,* 508-523.

Stipek, D. (2001). Pathways to constructive behavior: Importance of academic achievement in early elementary grades. In A. Bohart & D. Stipek (Eds.), *Constructive and destructive behavior: Implications for family, school, and society* (pp. 291-315). Washington, DC: American Psychological Association.

Stipek, D. (2004). Teaching practices in kindergarten and first grade: Different strokes for different folks. *Early Childhood Research Quarterly, 19,* 548-568.

Stipek, D., Feiler, R., Byler, P., Ryan, R..Milburn, S., & Salmon, J. (1998). Good beginnings: What difference does that program make in preparing young children for school? *Journal of Applied Developmental Psychology, 19*(115), 41-66.

Stipek, D., Feiler, R., & Daniels, D., S. (1995). Effects of differential instructional approaches on young children's achievement and motivation. *Child Development, 66*(115), 209-223.

Stipek, D., Galluzzo, D., & Milburn, S. (1992). Characterizing early childhood education programs for poor and middle-class children. *Early Childhood Research Quarterly, 75,* 1-19.

Straus, A. (2003). *The primordial violence: Corporal punishment by parents, cognitive development, and crime.* Walnut Creek, CA: Alta Mira Press.

Straus, A. (2001). Alienation and reduced income. In M.A. Straus (Ed.), *Beating the Devil Out of Them: Corporal Punishment in American Families and Its Effects on Children* (pp. 137-146). New Brunswick, NJ: Transaction Publication.

U.S. Department of Education**,** *No Child Left Behind Act of 2001 (2002).* P.L. 107-110. Available online at http://www.nochildleftbehind.gov.

U.S. Department of Education, National Center for Education Statistics (2005a). *Early Childhood Longitudinal Study, Kindergarten Class of 1998-99 (ECLSK)*, *Psychometric Report for the Third Grade* (NCES 2005-062), by Judith M. Pollack, Donald A. Rock, and Michael J. Weiss, Educational Testing Service, Sally Atkins-Burnett, University of Toledo, Karen Tourangeau, Westat, Jerry West and Elvira Germino-Hausken, National Center for Education Statistics. Washington, DC.

U.S. Department of Education, National Center for Education Statistics (2005). *Early Childhood Longitudinal Study, Kindergarten Class of 1998-99 (ECLSK)*, *Psychometric Report Kindergarten Through First Grade* (NCES 2002-05), by

Donald A. Rock and Judith M. Pollack, Educational Testing Service, Elvira Germino Hausken, project officer.

Weikart, D., Epstein, A., Schweinhart, L., & Bond, J. (1978). *The Ypsilanti preschool curriculum demonstration project: Preschool years and longitudinal results* (Monographs of the High/Scope Educational Research Foundation No. 4). Ypsilanti, MI: High/Scope Press.

Wentzel, K. (1991). Social competence at school: Relations between social responsibility and academic achievement. *Review of Educational Research, 61,* 1-24.

Wentzel, K. (1993). Does being good make the grade: Relations between academics and social competence in early adolescence. *Journal of Educational Psychology, 85,* 357-364.

Wesley, P., & Buysse, V. (2003). Making meaning of school readiness in schools and communities. *Early Childhood Research Quarterly, 18,* 351-375.

Whitehurst, G., & Lonigan, C. (1998). Child development and the emergent literacy. *Child Development, 68,* 848-872.

Zsolnai, A. (2002). Relationship between children's social competence, learning motivation and school achievement. *Educational Psychology, 22*, 317-329.