

ABSTRACT

Title of thesis: INFLUENCES OF SCHOOL, CLASSROOM, AND TEACHER CHARACTERISTICS ON CHILDREN'S SCHOOL READINESS

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A number of factors contribute to the school readiness of children, including child and family characteristics, neighborhood residence, and early care and education experiences. Early skills are the foundation for later school and life success. The current study examines the influence of school composition, classroom quality, and teacher preparation on kindergarten children's school readiness using data originally collected as part of an evaluation of a school readiness intervention. Children's academic school readiness was predicted by teachers' preparation in child development. Children had fewer problem behaviors when their teachers were more highly educated and specialized in child development and, surprisingly, when they attended schools with higher concentrations of low-income students. Child race was the only variable significantly related to children's social skills. These results suggest that teachers play an important role in children's development of foundational skills, and provide support for specific and targeted professional development around early childhood education.

INFLUENCES OF SCHOOL, CLASSROOM, AND TEACHER CHARACTERISTICS
ON CHILDREN'S SCHOOL READINESS

By

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Introduction

School readiness generally refers to the point at which a child's physical, cognitive, language, and social skills mature to the level that the child is ready to engage in, benefit from, and succeed in formal schooling (Goal One Technical Planning Group, 1993; Rhode Island KIDS COUNT, 2005). Experts have documented a gap between the school readiness of children reared in poverty and those from middle class backgrounds (Lee & Burkham, 2002). Recent research suggests that this gap begins as early as infancy (Halle, Forry, Hair, Perper, Wadner, Wessel, & Vick, 2009).

Although the number of families enrolling their children in pre-kindergarten is rapidly expanding, as of 2000 only 49% of 3- and 4-year old U.S. children were enrolled in school, including center- and school-based care, according to the U.S. Census (National Institute for Early Education Research [NIEER], 2010). On the other hand, kindergarten is the point at which virtually all children begin their formal education. The overwhelming majority of 5-year olds (98%) attend kindergarten according to national surveys of parents of early elementary students (West, Germino-Hausken, Chandler, & Collins, 1992). Therefore, it is important to address the readiness of children for these formal kindergarten experiences, particularly children from impoverished backgrounds.

Poverty is a large and persistent problem in America. Rates of poverty are relatively high and a majority of people living in poverty are children. A large proportion of these children are minorities. Census data for 2007 indicate that the number of children living in poverty increased to 13.3 million, up from 11.6 million children in 2000, according to a recent Child Trends report (Moore, Redd, Burkhauser,

Mbwana, & Collins, 2009). The researchers note that the percentage of children living in families with incomes below the poverty line has increased from 16.2 percent in 2000 to 18.0 percent in 2007. African American (34.5%) and Hispanic (28.6%) children were more than twice as likely to live in poverty in 2007 as white and Asian children.

There is convincing evidence that poverty is most pernicious for children in the early childhood years (Duncan, Ziol-Guest, & Kalil, 2010). Early experience matters in the development of children's brains (Greenough, Black, & Wallace, 1987), and early experiences of poverty and related stressors have long-term consequences for the development of specific brain regions and associated cognitive and socioemotional behaviors (e.g., Evans & Schamberg, 2009; Farah, Shera, Savage, Betancourt, Giannetta, Brodsky, Malmud, & Hurt, 2006; Kishiyama, Boyce, Jimenez, Perry, & Knight, 2009; Lupien, King, Meaney, & McEwen, 2001; Mezzacappa, 2004; Noble, Norman, & Farah, 2005; Stevens, Lauinger, & Neville, 2009). The relationship between poverty and these developmental outcomes is thought to be mediated by family processes and qualities of the home environment, including parental stress, parental behaviors, and parental investment of money and time in their children (Gershoff, Aber, Raver, & Lennon, 2007; Raver, Gershoff, & Aber, 2007).

Through these direct and indirect pathways, poverty has large and consistent associations with negative academic outcomes. Studies have found consistently large negative associations between poverty during early childhood and academic outcomes (Brooks-Gunn & Duncan, 1997; Guo, 1998). According to a recent Child Trends report (Halle et al., 2009), gaps in cognitive, social, and behavioral domains based on factors

such as family income, maternal educational attainment, race/ethnicity, and home language can be detected as early as nine months of age and widen by 24 months of age.

Disadvantaged children face an elevated risk for a variety of adverse educational outcomes. They are less likely to attend center-based childcare prior to kindergarten entry (Fuller, 2004; NIEER, 2010). Of the low-income mothers included in Fuller et al.'s (2004) study, 47% selected center-based care for their children, and 53% selected home-based care. In low-income neighborhoods, the structural quality of center-based care is generally higher than the quality of home-based care (Fuller et al., 2004).

Further, disadvantaged children begin formal schooling with poorer cognitive and social skills (e.g., Hertzman, McLean, Kohen, Dunn, & Evans, 2002; Kershaw, Forer, Irwin, Hertzman, & Lapointe, 2007; Lapoint, Ford, & Zumbo, 2007; Leventhal & Brooks-Gunn, 2000; National Institute of Child Health and Human Development Early Child Care Research Network [NICHD ECCRN], 2005), and attend lower quality kindergarten classes (Pianta, Howes, Burchinal, Bryant, Clifford, Early, & Barbarin, 2005; Pianta, La Paro, Cox, & Bradley, 2002) taught by less qualified teachers (Clifford, Bryant, & Early, 2005). As a result, these children make fewer gains during their first year of school and these deficits persist throughout the elementary school years (Denton & West, 2002; Lee & Burkham, 2002) and beyond. In a recent study (Vandell, Belsky, Burchinal, Steinberg, & Vandergrift, 2010) adolescents who were in high-quality child care settings as young children scored slightly higher on measures of academic and cognitive achievement, mediated, in part, by earlier child-care effects on achievement. These adolescents were also slightly less likely to report externalizing

behaviors than peers who were in lower-quality child care arrangements during their early years.

For example, some studies suggest that children from impoverished backgrounds are more likely to have delays in their reading skills, ranging from literacy concepts at 48 months (Smith & Dixon, 1995) to foundational skills at ages four to eight years (Duncan & Seymour, 2000). Early reading ability correlates highly with later academic success, and children who initially have difficulty learning this skill often fall further behind as they progress through school (Juel, 1988). In fact, there is an 88% chance that a poor reader in first grade will remain a poor reader in fourth grade (Juel, 1988). Good readers tend to easily improve their skills, whereas poor readers experience increased difficulties.

The trajectory continues, with at-risk children eventually experiencing higher retention and drop-out rates and lower educational attainment. Early childhood poverty, after controlling for income in middle childhood and adolescence, is associated with detrimental effects on educational attainment and adult earnings and work hours (Duncan et al., 2010). Further, income matters more for the developmental outcomes of poor children than those of non-poor children (Duncan et al., 2010).

The relationship between growing up poor and poor academic outcomes may partly be explained by differences in home environments. Poor children are more likely than their more affluent peers to be raised by parents who have completed fewer years of education, and to grow up in households that are less cognitively stimulating (Guo & Harris, 2000) which can negatively affect children's cognitive and academic attainment (Haveman & Wolfe, 1995).

Other contributing factors of the negative academic outcomes of at-risk children include the quality of the schools, classrooms, and teachers available to these children. The desire for quality early learning experiences to reduce gaps in achievement across racial and economic lines and to ensure that all children begin school ready to learn has recently led to the development of the Common Core of Standards for kindergarten through twelfth grade (Common Core State Standards Initiative, 2010).

Although the implementation of a uniform system of standards beginning in kindergarten is concerning to some child development experts, the urgency of the issue is evident. We need to intervene early in the educational career of children to ensure their success. The characteristics of schools, classrooms, and teachers susceptible to public intervention and their influence on children's early school performance are therefore important to understand. The current study aimed to further elucidate aspects of these relationships.

Purpose of the Study

The purpose of the current study was to investigate the impact of school characteristics, classroom characteristics, and teacher characteristics on young children's school readiness outcomes, after controlling for child and family factors known to affect children's academic outcomes. Specifically, my overarching research question was what is the unique and additive contribution of school-wide economic disadvantage, classroom quality, and teacher education and early childhood education (ECE)/child development specialization to kindergarten children's cognitive/academic school readiness and teacher-reported social skills and behavior problems? To address this question, I analyzed data from a follow-up study evaluating the impact of an early

childhood intervention on children's school readiness. The following hypotheses guided the study:

1. The level of school-wide economic disadvantage would be negatively related to children's cognitive/academic school readiness and social skills, and positively related to children's behavior problems.
2. Higher levels of classroom quality would be positively related to children's cognitive/academic school readiness and social skills, and negatively related to children's behavior problems.
3. Higher levels of teacher education and ECE specialization would be positively related to children's cognitive/academic school readiness and social skills, and negatively related to children's behavior problems.

Literature Review

Introduction

Many researchers have investigated the impacts of school, teacher, and classroom characteristics on young children's academic, social, and behavioral outcomes. In the following chapter, I describe what we know about the different resources with which children enter formal schooling, including those related to child and family characteristics and those related to early learning environments. Then I describe research on the relationships between socioeconomic status, school quality, classroom quality, and teacher education and their effects on children's school readiness outcomes.

School Readiness

Children begin kindergarten with different sets of knowledge and skills. The National Education Goals Panel was created in 1990 as a partnership between the President and the nation's governors with the goal of improving America's educational performance (National Education Goals Panel, n.d.). The Panel was charged with monitoring national and state progress toward eight National Education Goals, which were to be achieved by the year 2000. Specific to the current study, the first goal stated that all children will start school ready to learn, and included three specific objectives: (1) all children will have access to high-quality and developmentally appropriate preschool programs that help prepare children for school; (2) every parent in the United States will be a child's first teacher and devote time each day to helping such parent's preschool child learn, and parents will have access to the training and support parents need; and (3) children will receive the nutrition, physical activity experiences, and

health care needed to arrive at school with healthy minds and bodies, and to maintain the mental alertness necessary to be prepared to learn, and the number of low-birth weight babies will be significantly reduced through enhanced prenatal health systems (Goal One Technical Planning Group, 1993).

Whereas there is no universally accepted definition of school readiness, researchers have accumulated support for the importance of the five domains of development with respect to preparing children for success in school, which were described in 1994 by the Goal One Technical Planning Group. These domains include: (1) physical well-being and motor development; (2) social and emotional development; (3) approaches to learning; (4) language usage; and (5) cognition and general knowledge (Goal One Technical Planning Group, 1993). The group recommended that assessments of school readiness should involve the collection of information from parents and teachers, as well as the direct assessments of the children themselves (Goal One Technical Planning Group, 1993).

Equally important to ensuring children's readiness for school is ensuring schools readiness for children. In 1998, the Goals Panel released a report recommending ten specific approaches which were perceived as key to ensuring that schools are ready for children: (1) Smooth the transition between home and school; (2) Endeavor to achieve continuity between early care and education programs and elementary schools; (3) Help children learn and understand their complex world; (4) Strive to help every child achieve success; (5) Help every teacher and every adult who interacts with children during the school day be successful; (6) Introduce or expand approaches shown to raise achievement; (7) Alter practices and programs if existing ones do not benefit children;

(8) Serve children in communities; (9) Take responsibility for results; and (10) Have strong leadership (National Education Goals Panel, 1998).

Cognitive/academic school readiness. Children who begin kindergarten with certain resources seem to be at an advantage. Data from the Early Childhood Longitudinal Study indicate that children with more school readiness skills (e.g., letter, number, and shape recognition) and those with a positive approach to learning demonstrate significantly higher overall reading and mathematics knowledge and skills in the spring of kindergarten and one year later in the spring of first grade (Denton & West, 2002).

Researchers have found that domain-specific skills are as important to kindergarten success as overall intellectual abilities/competencies. According to a meta-analysis by Duncan et al. (2007), math, reading, and attentional skills at school entry are the strongest predictors of later achievement. Using six international longitudinal data sets, Grissmer, Aiyer, Murrah, Grimm, & Steele (2010) determined that of the developing skills measured around kindergarten entrance, fine motor skills are a strong predictor of fifth-grade math and reading achievement, and general knowledge of the social and physical world is the strongest predictor of science and reading and also a significant predictor of later math skills. Approaches to learning and attention, fine motor skills, and general knowledge were found to be much stronger predictors of later math, reading, and science scores than early math and reading scores alone. The authors suggest that the general knowledge test captures comprehension and ability to integrate knowledge of the external world, skills which are important in later elementary school grades.

Children may differ in their cognitive/academic school readiness skills based on child-specific factors. In a study conducted by Gullo and Burton (1992), gender was not a significant predictor of academic readiness, but age at school entry and number of years in preschool accounted for a significant amount of the variance, with children entering school earlier scoring higher at the end of kindergarten regardless of whether the children were at-risk for school failure.

A nationally representative study (Denton & West, 2002) found that while children's overall reading and math achievement did not vary by gender, there were gender differences in terms of children's acquisition of specific reading and math skills. Females were more likely to recognize words by sight and understand words in context than males by first grade; males were more likely than females to solve problems that require multiplication and division.

School readiness in social skills and behavior. School readiness has also been described as the result of an organized system of interactions among people (children, teachers, parents), settings (home, school), and institutions (communities, neighborhoods, and governments) (Mashburn & Pianta, 2006). In this conceptualization, children learn through social relationships with peers, parents, and teachers. Social competence is behavior that reflects successful social functioning, including social interaction skills and positive relationships (Howes, 2004).

Children's socioemotional development is associated with their school readiness, presumably because children's social skills support their navigation of the new school context (Raver, 2002). Children's social skills and the quality of their

relationships with teachers are correlated to their later social and academic competence in early elementary school (Raver, Garner, & Smith-Donald, 2007).

In her review of program intervention effects on children's socioemotional development, Raver (2008) describes four mechanisms through which children's socioemotional development may play an important foundational role for later chances of school success: (1) children's distinct socioemotional profiles when they enter learning environments facilitate or hinder their engagement with peers, teachers, and the process of learning; (2) children establish and maintain relationships with teachers that are either responsive or conflictual in nature; (3) a child's problem behaviors have implications for opportunities for learning for the child manifesting difficulties and the child's peers; and (4) teachers' bring their own distinct socioemotional profiles to classroom interactions and instruction.

A child's social skills have implications for how well the child adapts to the classroom environment, with better social skills allowing a child to better take advantage of the learning opportunities in the classroom. School adjustment is a multidimensional construct that includes children's attitudes towards school, their affect in the classroom, their engagement or participation in the learning environment, and their scholastic progress. According to the interpersonal model of school adjustment (Ladd, Buhs, & Troop, 2004), children's interpersonal skills influence the types of relationships they form with peers and teachers and these relationships, in turn, facilitate or impede children's school adjustment beyond cognitive, linguistic, and family factors.

According to a 2004 review (Ladd et al., 2004), disruptive child behavior and internalizing/anxious problems in kindergarten correlate negatively with the quality of

teacher-child relationships and teacher-child closeness, and positively with teacher-child conflict and dependency in first grade. Positive relationships are linked to grade advancement among at-risk children while conflictual or dependent relationships are linked to later adjustment problems. In addition, qualities of the teacher-child relationship predict later classroom participation and, indirectly, academic achievement.

Further, children's interpersonal behaviors have a bearing on the status they achieve in peer groups and their success at friendship formation. Early peer rejection predicts problems such as negative school attitudes, school avoidance and underachievement while peer acceptance promotes social inclusion which, in turn, yields provisions that enhance interpersonal and scholastic adjustment. Similarly, children who enter school with prior friendships and develop new ones are more likely to form favorable school perceptions and do better academically.

Social competence and problem behavior may also facilitate or disrupt classroom processes, making children's social skills important for the learning of their classmates as well (Gilliam, 2005; Hertzman et al., 2002).

Executive function, including skills such as inhibitory control, working memory, and cognitive flexibility, is related to social competence and behavior, and is also an important aspect of school readiness (Bierman, Nix, Greenberg, Blair, & Domitrovich, 2008; Blair, 2002). Many children begin school lacking in executive function skills, and kindergarten teachers rank these skills as more critical for school readiness than content knowledge (Rimm-Kaufman, Pianta, & Cox, 2000). Low-income children have disproportionately poor executive functions (Noble, McCandliss, & Farah, 2007; Noble et al., 2005), but there is evidence that play-based learning enhances pre-school

children's executive function (Diamond, Barnett, Thomas, & Munro, 2007). As an aside, herein lies the concern with K-12 core standards since such standards will reduce play-based learning for 5-year olds. Ray and Smith (2010) argue that from a "whole child" perspective, recent changes in kindergarten to incorporate more direct instruction to meet standards are at odds with developmentally appropriate methods of teaching kindergarteners.

As with the cognitive/academic domains, child-specific factors affect children's social-behavioral outcomes. Gender differences can be seen in social competencies at kindergarten entrance. More boys experience developmental difficulties, and boys are almost twice as likely as girls to get angry easily and to argue with others. Girls are more prosocial and less prone to problem behavior and display a more positive approach to learning activities (Zill & West, 2001). From a developmental perspective, the assumption is that as children develop, their social interaction patterns become more complex (Howes et al., 2004).

Many teachers believe that non-cognitive aspects of school readiness, e.g., physical health and motor coordination, emotional well-being and ability to cooperate with their peers, and curiosity and eagerness to learn, are important for school success (Zill & West, 2001). A 1993 study led by the Institute of Education Sciences (IES) (Heaviside & Farris, 1993) found that 96% of public school kindergarten teachers felt that the most important quality for kindergarten readiness is for a child to be physically healthy, rested, and well-nourished. Other critical factors cited by these teachers included the ability to communicate needs, wants, and thoughts verbally, and being enthusiastic and curious in approaching new activities. These qualities were viewed as

more important than discrete skills such as counting and letter recognition, which the teachers felt children could learn during the school year.

Another survey of kindergarten teachers identified poor social and emotional development, specifically problems with social skills, trouble following directions, and difficulty with independent and group work, in addition to weaknesses in academic skills, as associated with difficult transitions to school (Rimm-Kaufman et al., 2000).

Although social skills and behavior may be important for kindergarten adjustment and learning, Grissmer et al. (2010) found that social skills were a weak predictor for later reading and math achievement, and behavioral problems were not predictive of later academic outcomes at all. However, the prevalence rates of behavior problems in young children combined with the documented link between behavior problems and children's later school success argue for the import of promoting children's school readiness skills in the social and behavioral domains. The prevalence rates for young children with challenging behavior ranges from 10 to 30% (Campbell, 1995; Qi & Kaiser, 2003; West, Denton, & Germino Hausken, 2000), and between 9% and 14% of children from birth to 5 years of age experience serious social and emotional problems that negatively affect their functioning and development (Brauner & Stephen, 2006). Children in state-funded pre-kindergarten programs are expelled at more than three times the rate of students in grades K–12 (Gilliam, 2005). Serious and persistent challenging behaviors in early childhood directly relate to later problems in school success, social relationships, educational and vocational success, and social adjustment (Campbell, 1995).

Contributions of early childcare and education to school readiness.

Although research suggests that parents and the home environment have a larger impact on child outcomes than early childhood programs do (e.g., NICHD ECCRN, 2002), attending center-based child care does improve children's cognitive and social skills upon kindergarten entry (e.g., Camilli, Varga, Ryan, & Barnett, 2010; Loeb, Fuller, Kagan, & Carrol, 2004). Disadvantaged children and children with the lowest cognitive skills benefit the most from center-based care (Lee & Bukham, 2002; Magnuson, Meyers, Ruhm, & Waldfogel, 2004; NICHD ECCRN, 2003; NICHD ECCRN, 2005). These effects persist throughout the kindergarten and first grade years (Magnuson et al., 2004).

There are documented gaps in center-based early education enrollment between advantaged and disadvantaged children. For example, data from the National Household Education Survey collected in 1999 indicate that 58% of mothers with a high school diploma or less enrolled their three-year old children in center-based care, compared with 80% of mothers with a college degree; 75% of mothers with a high school diploma or less used center-based care for their four-year old children, compared with 89% of highly-educated mothers; and 59% of mothers with a high school diploma or less enrolled their four-year olds in preschool, compared to 80% of college-educated mothers (NIEER, 2010). Further, preschool participation generally increased along with the mother's income, with the exception that families in poverty had somewhat higher participation rates than families just above the poverty line, who do not qualify for as much public support. Using data from the National Survey of Children's Health, Lippman, Vandivere, Keith, and Atienza (2008) found that a smaller share of low-income (53 percent) than higher-income (65 percent) children were in a nonparental child care

arrangement. And of the low-income mothers included in Fuller et al.'s (2004) study, 47% selected center-based care for their children, and 53% selected home-based care. Children of high-income and very low income parents are most likely to be in formal, center-based care, while children of lower income parents are more likely to use informal care.

Based on this evidence, center-based care may be less accessible for disadvantaged families; family income, parental employment, race/ethnicity, and maternal education, in addition to the availability of care, influence whether children attend center-based care, but the association between attending center-based care and better academic and social school-readiness outcomes at kindergarten entry is stronger for disadvantaged children (Magnuson et al., 2004; NIEER, 2010; Tout, Zaslow, Papillo, & Vandivere, 2001). McCartney, Dearing, Taylor, & Bub (2007) found that higher quality care was particularly advantageous for the school readiness skills of children from low-income families. High quality care affected outcomes directly through teacher-child interactions and instructional supports, and indirectly through teachers' support of children's learning and development at home. More specifically, Loeb et al. (2004) found that low-income children in center-based care displayed stronger cognitive growth when caregivers were more sensitive and responsive, and stronger social development when providers had higher levels of education.

Although fewer disadvantaged students attend center-based care prior to kindergarten, there is evidence that state-funded pre-kindergarten programs tend to target children at-risk for school difficulties. Clifford et al. (2005) examined 240 state-funded pre-kindergarten classrooms obtained from stratified random samples in six states with the intent of describing characteristics of the children, teachers, and classrooms. The pre-K programs served mostly low-income children and a large proportion of the children's mothers had a high school education or less.

Summary of the importance of school readiness skills. Certain skills that children acquire over their first few years of life help prepare them for school learning. Important school readiness skills are those that facilitate adjustment to kindergarten and predict later school achievement. Researchers have accumulated support for each of the domains of development outlined in the Goal One Technical Planning Group's framework (1993).

Evidence has been found for the importance of discrete skills such as letter, number, and shape recognition and also for more global competencies such as general knowledge, attention, and executive functioning. Children who are more proficient in these areas at the start of kindergarten demonstrate greater achievement in the following years. Teachers place stronger emphasis on physical health, communication, and approaches to learning than more strictly cognitive skills. The social skills that children possess when they enter kindergarten are thought to be important for their adjustment to the classroom environment, though social competence, per se, is a weak predictor of later academic success.

The age that children first enter early learning programs predicts their school readiness skills. In fact, participation in center-based care prior to kindergarten entry greatly enhances the readiness skills children display at kindergarten entry, with the effect even larger for disadvantaged students. These findings have led state-funded pre-K programs to target disadvantaged children, though gaps still exist in center-based early childcare participation rates between low-income, minority students and their more advantaged peers.

Relationships between Socioeconomic Status and School Readiness

Previous research has shown that poor and minority children start school behind their wealthier and majority-group counterparts (NICHD ECCRN, 2005). Children from low-income families enter school with more problem behaviors and lower mean academic skills, with the gaps tending to increase during the school years (Lee & Burkham, 2002). This may be due to a variety of factors associated with poverty, including less stimulating home environments (Gershoff et al., 2007; Klebanov, Brooks-Gunn, McCarton, & McCormick, 1998; Raver et al., 2007), lower likelihood of attendance in center-based care prior to kindergarten (NIEER, 2010), and the low quality of schools in impoverished neighborhoods (Pianta et al., 2002; Pianta et al., 2005).

Risk factors like low maternal education and low-income are associated with lower reading and math skills and general knowledge among entering kindergartners (Zill & West, 2001). Children with more than one risk factor do even worse, consistent with a model of cumulative effect of multiple risks on children's early intellectual development. Sociodemographic risk factors are considerably more common among kindergartners from racial-ethnic minorities than among those from white families.

Although the majority of high-risk children are socially competent, the more risk factors a child has, the greater the chances that the child exhibits classroom conduct problems and displays less positive approaches to learning (Zill & West, 2001). The ecological stressors experienced by young children in poverty jeopardize their ability to regulate their emotions and behavior (Raver, 2004). In low-income neighborhoods, preschool teachers report between 15 and 20 percent of their students exhibit high levels of problem behaviors (Gilliam, 2005).

Lee & Burkam (2002) have identified the disparities in school readiness between advantaged and disadvantaged students using data from the Early Childhood Longitudinal Study – Kindergarten cohort (ECLS-K). Disadvantaged children start kindergarten with significantly lower cognitive skills than their more advantaged counterparts, with socioeconomic status (SES) accounting for most of the variance in cognitive scores. Before even entering kindergarten, the average cognitive score of children in the highest SES group are 60% above the scores of the lowest SES group. Race and ethnicity, in turn, are associated with SES, with 34% of African American children and 29% of Hispanic children in the lowest quintile of SES compared with only 9% of white children.

Poverty, school characteristics, and school readiness. Reinforcing the gap, low-SES children begin school at kindergarten in systematically lower-quality neighborhood elementary schools than their more advantaged counterparts, pointing to the very important correlation between neighborhood residence and the quality of neighborhood schools and classroom composition. Neighborhood-level variables—such as safety; social cohesion; SES; and proportion of unemployed adults, single-parent families, and immigrants—have also been linked to developmental outcomes (Leventhal & Brooks-Gunn, 2000).

Neighborhood SES characteristics are associated with classroom composition which may be related to the learning experiences of students. The development of early childhood preschool competencies varies enormously by the sociodemographic character of urban neighborhoods, with the proportion of kindergarten children at risk for later school difficulties ranging from 0% to 21% across 23 planning neighborhoods

in one study (Hertzman et al., 2002). In affluent neighborhoods, a Grade 1 teacher with 30 children in the classroom can expect that few of the children have a cognitive delay and that no more than 3 or 4 children have any form of developmental vulnerability. In less affluent neighborhoods, a teacher who also has 30 children in a classroom may face more children who experience learning difficulties and more than 10 children who have some form of developmental delay (Hertzman et al., 2002). In another study, five early development domains were significantly predicted by between two and eight of 13 neighborhood variables including family structure, income, education, language, and employment rates (Kershaw et al., 2007).

One explanation for the low-quality of schools in low-income neighborhoods is a lack of resources. Greenwald, Hedges & Laine (1996) performed a meta-analysis of 60 studies that controlled for SES characteristics to assess the direction and magnitude of the relations between a variety of school inputs (expenditures) and student achievement. The analysis found that a broad range of resources were positively related to student outcomes, with effect sizes large enough to suggest that moderate increases in spending may be associated with significant increases in achievement. Key indicators of school quality included per-pupil expenditure, teacher ability, teacher education, teacher experience, teacher salary, teacher/pupil ratio, and school size.

In a discussion of potentially promising ways to improve the learning outcomes of low-income children, Jacob & Ludwig (2008) point out that one reason why children's outcomes vary so dramatically along race and class lines is that high-poverty schools lack the capacity to substantially improve student learning, independent of financial resources. Under this perspective the teachers and administrators in highly

disadvantaged school districts are thought to lack the skills or knowledge necessary to improve the quality of instruction on their own. Potential solutions to this problem would involve helping schools improve the quality of their standard operating practices, for example by helping implement specific new instructional or organizational practices (i.e., curriculum, instruction, school organization) and/or increasing the instructional capacity of staff in these schools through professional development or more selective hiring.

Perhaps because of the differences in school quality, differences in children's achievement by their family's poverty status, race/ethnicity, and school type persist from kindergarten through the spring of first grade (Denton & West, 2002). At the end of the first grade year, children from non-poor families are more likely to be reading and to be successful at advanced mathematical operations than children from poor families. White and Asian children are more likely to be successful at these skills than African American or Hispanic children by the spring of the first grade year, which is greatly attributable to the disproportionate number of these children who are reared in poverty (Moore, Redd, Burkhauser, Mbwana, & Collins, 2009).

In a study examining mediated pathways from family characteristics to classroom structural quality to child outcomes (NICHD ECCRN, 2002), paths from family income to cognitive and social competence were mediated by structural classroom features, providing further evidence that children from lower income families are in classrooms with less educated teachers and lower quality and, as a result, have poorer cognitive and social outcomes. Classrooms with higher concentrations of

poverty tend to be of lower quality, particularly instructional quality (NICHD ECCRN, 2003; Pianta et al., 2002).

Summary of SES influences on school readiness. The achievement gap between advantaged and disadvantaged children starts in infancy and persists throughout the early elementary years. The primary factors which place children “at risk” of school failure are being from a low-income family and having a mother with a lower level of education. Racial and ethnic minority children are more likely to be at risk than white children. Disadvantaged children enter kindergarten with poorer school readiness skills and more behavior problems, and attend schools with lower quality classrooms.

Relationships between Classroom Quality and School Readiness

Classroom quality can be defined as the environmental components which lead to positive child academic and social outcomes. Definitions of classroom quality reflect both features of program design and infrastructure and features of the classroom environment to which children are directly exposed (NICHD ECCRN, 2002).

The structural quality of a classroom includes features such as class size, teacher to child ratio, teacher education, and availability of supplementary services (Loeb et al., 2004; Magnuson et al., 2004). The process quality of a classroom refers to the opportunities and experiences available to children on a daily basis. These include the social, emotional, physical, and instructional elements of proximal-level interactions among teachers, children, and materials (Mashburn et al., 2008; Pianta et al., 2005).

Both structural and process quality are important for predicting children’s academic gains (Howes et al., 2008). Structural quality is thought to have an indirect

relationship to child outcomes through process quality. Researchers from the NICHD study of early child care detected a mediated pathway from structural features of classrooms through process features to child outcomes using structural equation modeling (NICHD ECCRN, 2002). Structural quality, i.e., teacher education and child-staff ratio, was related to the care giving behaviors of teachers (process quality), which in turn was related to child outcomes (i.e., cognitive and social competence). The study found significant indirect paths from structural indicators to cognitive competence and teacher reported social competence, mediated by process indicators.

Most of the pre-kindergarten programs in Clifford et al.'s (2005) study had high structural quality. Although process quality is generally positively related to structural quality, the researchers found low-levels of process quality in these classrooms, particularly regarding instructional climate. Nonetheless, children in the study demonstrated significant and meaningful improvement between the fall and spring of the pre-K year on standardized measures of language and math, implying that high structural quality may compensate for low instructional climates in pre-K programs.

La Paro et al. (2009) found low levels of instructional support in kindergarten classrooms as well, combined with moderate levels of classroom organization. Quality was relatively stable across the pre-K and kindergarten years, although the Provisions for Learning subscale of the Early Childhood Environment Rating Scale – Revised (ECERS-R) was significantly lower in kindergarten than in pre-K. These results may be related to the increased time allotted in kindergarten classrooms to direct instruction and the decreased time devoted to activity centers than what occurs in pre-kindergarten classrooms.

Process quality is more consistently tied to children's school readiness outcomes than structural quality. High quality instruction and close teacher-child relationships were associated with gains in children's academic outcomes in a study by Howes et al. (2008). Teachers' perceptions of the closeness of their relationships with their students also predicted gains in social skills and decreases in problem behaviors. Pianta et al., (2002) found that children's social and academic competencies were positively correlated with ratings of teachers' positive interactions with those children.

Approaches to assessing quality include: examining whether programs adhere to standards related to program design; conducting classroom observations of physical safety, appropriate materials, and teacher-student interaction; and conducting classroom observations of emotional and instructional teacher-child interactions. Quality is therefore a multi-faceted, multi-level construct which includes a variety of program and classroom features.

Despite a preponderance of evidence linking classroom quality to positive child outcomes, some research has yielded inconsistent evidence on the relation between quality and child outcomes due to the various methods of conceptualizing and assessing quality (NICHD ECCRN & Duncan, 2003). There is evidence of positive associations between children's developmental outcomes and kindergarten adjustment and all three approaches to assessing classroom quality (Bryant, 1994; Hamre & Pianta, 2005; Howes, 1990; NICHD ECCRN, 2002). Compliance with standards is associated with improved developmental outcomes and kindergarten adjustment for children (Howes, 1990). Researchers have also demonstrated associations between higher overall

observed classroom quality scores and children's developmental outcomes (Bryant, 1994).

However, other studies have found associations to child outcomes only for the approaches assessing emotional and instructional teacher-child interactions. For example, Mashburn et al. (2008) used a data set that included stratified random samples from 11 states that serve 80% of children who attend state pre-K programs to determine which type of quality assessment best accounts for the variability in pre-schoolers' academic and social development. Of the three approaches, only the quality of the emotional and instructional interactions between teachers and children consistently predicted children's academic, language, and social outcomes. This is in line with a bioecological model of child development, in which the effects of educational programs on children's learning are mediated through proximal processes such as children's direct interactions with teachers. Following this model, it may be that high structural quality provides ecological conditions conducive to quality teacher-child interactions which in turn produce positive child outcomes.

Mashburn et al. (2008) point out that the lack of associations between structural quality and children's outcomes in their study may be because the measures used to assess these aspects of quality, the ECERS-R and the NIEER program standards, are gold standards to which most pre-k programs aspire. Programs may, therefore, demonstrate overall higher levels of program quality as assessed by these measures, thereby reducing variation in quality between classrooms, and diminishing the statistical effect.

More recent research has provided evidence of a link between teacher beliefs and psychological functioning and features of child care and pre-K classroom process quality, such as teacher-child interactions (La Paro et al., 2009). Teacher attitudes and depressive symptom variables explained a significant portion of the variance in observed quality in kindergarten: teachers reporting higher levels of depressive symptoms were observed to show lower levels of classroom organization and emotional and instructional support; teachers reporting more traditional, adult-centered views had lower scores across all measures of quality. Only one-third of kindergarten classrooms in this study received high ratings with respect to emotional supports. Classrooms characterized by high-quality emotional supports are critical to children's social and emotional development (Birch & Ladd, 1998).

It is important to note that schools with high concentrations of low-income students, of children whose mothers have lower levels of education, and of minority students tend to have lower global ratings of positive teacher-child interactions and instructional climate (Early et al., 2010; Pianta et al., 2002; Pianta et al., 2005). Pianta et al. (2002) found that, in turn, observed social behavior and teacher reported social and academic competence were higher when global classroom process quality was higher. In Clifford et al.'s (2005) study of state-funded pre-kindergarten programs, ethnic minority children were likely to be in classrooms with high concentrations of poor children. Further, whereas 81% of teachers in the study held a Bachelor's degree or higher, classrooms with higher proportions of poor children tended to have teachers with less education.

Summary of the impacts of classroom quality on school readiness.

Structural quality refers to features of a classroom that may be subject to regulations or standards, such as teacher: child ratio and teacher education. Most early learning programs demonstrate high structural quality for this reason, although structural quality is likely indirectly tied to child outcomes and mediated by process quality.

Process quality involves the interactions that take place in the classroom between teachers and children and is more closely tied to child outcomes. Research has documented high levels of emotional support in early learning settings, which is critical to social and emotional development, but has also documented low levels of instructional support in these contexts.

The quality of children's relationships with teachers may be impacted by the personality and attitudes of the teacher. Disadvantaged children have poorer relationships with their teachers, are in classrooms with poorer process quality, and demonstrate poorer social and academic competence.

Relationships between Teacher Characteristics, Classroom Quality, and School Readiness

There is a large evidentiary base relative to the relation between teacher characteristics and classroom quality, and ultimately the academic outcomes of the students they teach (e.g., Early et al., 2006; Early et al., 2007; NICHD ECCRN, 2002; La Paro et al., 2009; Mashburn & Pianta, 2006; Pianta et al., 2005). Thus, it is important to consider such teacher characteristics as the level and type of teacher education. Regarding early childhood teachers, Heaviside and Farris (1993) documented that public school kindergarten teachers average nine years of kindergarten teaching

experience. Fifty-four percent majored in ECE, and 29 percent hold memberships in professional associations for ECE.

There is mixed evidence regarding the relationship between teacher education and classroom quality. Some studies find a link between higher levels of teacher education and higher levels of global classroom quality in early childhood and early elementary school settings (NICHD ECCRN, 2002; La Paro et al., 2009; Pianta et al., 2005) while others do not (Mashburn & Pianta, 2006; Early et al., 2006; Early et al., 2007). La Paro et al. (2009) found that kindergarten predictors of classroom quality were in general very similar to predictors of classroom quality in pre-K, except that kindergarten teachers with a Master's degree or higher, in contrast to pre-K teachers with a Master's degree or higher, did provide higher levels of Instructional Support, an area that was rated relatively low overall.

Pianta et al. (2005) looked at whether program, classroom, and teacher characteristics predicted variations in observed pre-kindergarten classroom quality. Of the teacher characteristics examined, teacher experience, beliefs, and level of education were each significant predictors of quality but not teacher degree of specialization in early childhood. Process quality was related to teachers' child-centered beliefs.

Importantly for the current research, state and classroom poverty were more robust predictors of classroom quality in the Pianta et al. (2005) study. Quality was lower in classrooms with highly concentrated poverty, i.e., classrooms in which more than 60% of children were from homes below the poverty line. The researchers found that teachers in high poverty classrooms were paid less than teachers with fewer poor children, although teacher wages were not a significant predictor of classroom quality.

Other studies have shown no link between teacher education, classroom quality, and child outcomes. For example, Howes et al. (2008) did not find a relation between teacher education and structural quality as measured by the ECERS-R and academic gains. Additionally, although teachers' degree predicted levels of instructional support in the classroom, La Paro et al. (2009) found that program characteristics and teacher psychological variables were more predictive of kindergarten classroom quality, in terms of interactions, activities, and groupings, than teacher educational background and experience. Phillips, Mekos, Scarr, McCartney and Abbott-Shim (2001) found that the associations between level of teacher education and teacher specialization and classroom quality disappeared once non-teacher variables that were related to quality were added as controls to the models.

Using replicated secondary data analysis, Early et al. (2007) obtained seven similar datasets examining teacher quality and child outcomes and performed identical analyses to determine the extent to which teacher education and specialized preparation contribute to child outcomes. They found mixed results, but mostly null or negative, for associations between teacher degree or level of education and academic pre-K child outcomes. The authors examined the question by highest degree attained by the teacher, by highest education level among teachers with an ECE/child development major, and by major among teachers with a Bachelor's degree.

Because prior research has operationalized teacher education in many different ways, and consequently research linking teacher education to classroom quality is not entirely consistent, Early et al. (2006) conducted a fine grained examination of teacher education, looking at years of education, degrees obtained, major, and various

credentials (state certification and Child Development Associate [CDA]) and its relation to classroom quality and children's academic gains. Each measure of teacher education was used separately to predict classroom quality and children's academic gains. Early et al. (2006) found few associations between teacher education or early childhood/child development specialization and classroom quality or child academic outcomes. Level of education was linked to gains in math skills but not other academic skills, and specialized credentials were linked to gains in basic skills. There was also marginal evidence that level of education matters for the Teaching and Learning subscale of the ECERS, a scale which has previously been linked to children's academic gains (Howes et al., 2008).

Whereas it is generally believed that higher levels of teacher education contribute to better classroom quality which in turn contributes to better child outcomes, the research is somewhat inconsistent on this matter.

Why is the educational level and experience of kindergarten teachers not related to classroom quality and child outcomes? The relationship between teacher education and child outcomes may depend on the child's gender. Burchinal et al. (2000) found an association between teachers' education and girls' academic skills, but not boys' academic skills.

Further, Early et al. (2007) suggest that poor teacher preparation, including not equipping teachers with skills needed for forming individual relationships with children to help them learn, may be at fault for the lack of association between teacher education and child academic outcomes. They also advocate for more support for young teachers as they practice implementing what they've learned in school. Further, market forces

(i.e., higher wages) may be luring the brightest Associate's level teachers to public pre-K programs, and the brightest Bachelor's level teachers out of pre-K in favor of elementary schools. These market force trends may even out the quality of these two levels of teachers in the public pre-K system.

Summary of the relationships between teacher education, classroom quality, and child outcomes. Although anecdotally it would seem that more highly educated teachers would have classrooms higher in quality and students with better outcomes, there is actually inconsistent evidence for the influence of teacher education on quality and outcomes, perhaps due to the variations in how “teacher education” is operationalized. While some research has found that kindergarten teachers with advanced degrees provide higher levels of instructional support, and those with specialization in early childhood produce more substantial academic gains, other researchers have found that those types of relationships disappear when other factors related to quality and outcomes are accounted for. This lack of a relationship between teacher education, classroom quality, and child outcomes may point to the need for more consistent and rigorous assessment of all three constructs.

Contributions of the Present Study

Given the need for more research on what factors promote children's school readiness, the current study examines the effects of school, classroom, and teacher characteristics on children's skills in this area. Many studies have investigated how two levels of variables, i.e., classroom quality and teacher education, are related to child outcomes. There is also convincing evidence that low-income students in general have poorer school readiness outcomes, and that schools with high concentrations of low-

income students do worse. The current study examines the associations among three distinct levels of school-related variables – school-wide poverty, classroom quality, and two measures of teacher education – that have been shown to predict child outcomes.

Methods

Overview of Study

The W.K. Kellogg Foundation (WKKF) launched the Special Partnerships to Assure Ready Kids (SPARK) initiative in 2001. WKKF awarded grants in seven states and the District of Columbia to get children ready for school and schools ready for children. A Phase I planning grant provided the opportunity for each grantee to create community-wide partnerships and action plans, which targeted specific populations of vulnerable children. Phase II implementation began in mid-2003 and ended in May 2008.

The grantees implemented various strategies for school readiness and success in school, including providing direct services to children and families such as casework services, home visiting, assessment, and referrals, as well as quality improvement services such as professional education, consultation, grants to child care settings, curriculum development, and accreditation support.

Walter R. McDonald & Associates, Inc. (WRMA) was awarded the contract to evaluate the SPARK initiative. At the time the current analysis was conducted, I was employed by WRMA. Thus, I was given complete access to the raw data, as well as the data file for the entire project. I was also provided copies of measures and completed evaluation reports.

The purpose of the Ready Kids Follow-Up (RKF) study was to assess the impact of the SPARK initiative on kindergarten readiness and success in school. With the use of common measures and data collection protocols, the study systematically assessed the impact of SPARK as well as various community-based intervention models. Four

of the initial seven SPARK grantees participated in Cohort 1 of the RKF study: Georgia; Hawaii; New Mexico; and Ohio.

The RKF study employed a nonequivalent group, post-test only design. Children who participated in the SPARK initiative whose parents consented to participate in the follow-up study were assessed at the beginning of their kindergarten year for school readiness and again in the spring for school success. A comparison group of children recruited from the same schools was also assessed using the same measures in the fall and spring of their kindergarten year. At both time points, data collectors administered two school readiness assessments to children and parents, and parents and teachers rated children's social skills and problem behaviors. The study examined whether SPARK children were more prepared for kindergarten in the fall than comparison children, and whether SPARK children demonstrated more progress than comparison children over the course of the year.

While the intent of the RKF study was to evaluate the effectiveness of the SPARK initiative by assessing differences in school readiness outcomes of SPARK and non-SPARK children, the purpose of the current study was to investigate the influences of school, classroom, and teacher characteristics on school readiness outcomes, regardless of early childhood education (ECE) experiences. With this purpose in mind, child intervention status (i.e., SPARK or non-SPARK) was controlled for in all analyses.

Participants

The current study utilized data collected from the first cohort of the RKF study, and therefore only included children from four sites. A total of 204 children who

entered kindergarten in the fall of 2008 were identified and recruited across the four sites. Of the 204 children, 24 children were from Georgia, 68 from Hawaii, 47 from New Mexico, and 65 from Ohio. This sample size was appropriate for examining the number of predictor and outcome variables used in the current study (VanVoorhis & Morgan, 2007). See Table 1 for a description of participant characteristics.

Although there was limited attrition in this study, there was some variability in the number of participants who had available data for each variable used in the current study. A table specifying response rates for each variable examined is included in Appendix A.

Table 1

Participant Characteristics

	N (%)
Intervention Status	
SPARK	107 (52.5)
Comparison	97 (47.5)
Gender	
Female	103 (50.5)
Male	101 (49.5)
Race	
African American	23 (11.3)
Asian, Native Hawaiian, or Pacific Islander	49 (24)
Hispanic/Latino	64 (31.4)
White	50 (24.5)
Missing/Other	18 (8.8)
Primary Caregiver Education Level	
Did not complete HS	34 (16.7)
HS Diploma	70 (34.3)
Some College	52 (25.5)
Completed College	12 (5.9)
Attended Graduate School	1 (.5)
Completed Graduate School	5 (2.5)
Missing	30 (14.7)

Procedures

Kindergarten readiness was assessed in fall 2008 via child assessment and data from parents and teachers. In the spring of 2009, there was a follow-up assessment for success in school with children, parents, and teachers. Because I was interested in the effects of school, classroom, and teacher variables on children's outcomes, I used the kindergarten readiness data collected in the spring of 2009. I assumed that by the end of the kindergarten year, these variables will have had more time to exert their effects on children's outcomes than at the beginning of the kindergarten year. Teacher data, classroom data, and additional child data were collected via questionnaires in the fall of 2008. School FARMS rate was determined in the spring of 2010 for the 2009 academic year. Informed consent was obtained from the parents of all study children prior to data collection. Parents and teachers received a small financial incentive for completing surveys and assessments, and children received books.

Data collectors at each site received training from the study team to ensure the systematic implementation of the data collection protocols. The team also provided ongoing technical assistance for the data collectors during the course of the study. Site coordinators distributed data collection packets to the data collectors who arranged direct assessments with children as well as administration of questionnaires to teachers and parents. Site coordinators sent the completed data packets to the study team and arranged for incentive payments to teachers and parents.

Measures

To address this study's research questions, specific measures were selected from the overall study; they are described below. Demographic variables included in the

analyses were child gender, race/ethnicity, and primary caregiver education. The predictor variables assessed were school-wide SES, classroom quality, and teachers' level of education and ECE expertise. The outcome variables assessed were children's school readiness, social skills, and problem behavior. Information on the other measures used in the RKF analysis can be obtained from the Ready Kids Follow-Up Spring 2009 Data Collection Final Report (Walter R. McDonald & Associates, Inc., 2009).

Intervention status. Information on whether children participated in the SPARK initiative was obtained from the Parent/Child Demographic Survey (see Appendix C). The parent survey consists of 53 total items, 16 of which were completed by the data collector (i.e., project staff). The survey includes information on the child's ECE settings; ECE programs/interventions; transition to school activities; and parent and child demographics, child health, and household composition and income. Parents completed the survey in the fall of the child participants' kindergarten year.

Child gender. Child gender was obtained from the Parent/Child Demographic Survey. Females were assigned a code of (1) and males a code of (2).

Child race. Child race was obtained from the Parent/Child Demographic Survey and was re-coded into the following categories: African American; Asian, Native Hawaiian, and Pacific Islander; American Indian; Hispanic/Latino; White; and Other/Missing.

Primary caregiver education. The primary caregiver's highest level of education was obtained from the Parent/Child Demographic Survey. Parents could select from the following categories: Did not complete high school; High school

diploma; Some college; Completed college; Attended graduate school; and Completed graduate school. Research has shown a strong relationship between maternal education and children's school readiness (Guo & Harris, 2000; Haveman & Wolfe, 1995).

Because I was interested in the influences of school, classroom, and teacher characteristics on children's school readiness independent of maternal education, I controlled for the primary caregiver's education in the analysis.

School-wide SES. The percentage of children receiving free and reduced price meals, i.e. the school's FARMS rate, was used as a proxy for school-wide SES. The National School Lunch Program is a federally funded program that provides nutritional meals to students in public and nonprofit schools and residential child care institutions. Current guidelines require families to have household incomes of 185% or less of the federal poverty level in order for children to be eligible for the program (U.S. Department of Agriculture, 2010). The FARMS rates for the study schools were obtained from schoolmatters.com, a Web site sponsored by the Council of Chief State School Officers which is updated annually from publicly available information. The FARMS eligibility rate is a widely used proxy measure of family income and economic disadvantage in schools (e.g., Pianta et al., 2002).

Classroom quality. Teachers completed a Teacher Questionnaire in the fall (see Appendix D). The teacher survey consisted of 20 questions organized into three sections: Characteristics of Class and Children; Class Organization, Class Activities, and Evaluation; and Teacher Background. A proxy for classroom quality was derived from teachers' responses to an item about the types of interest areas or centers for activities in the classroom.

Teachers were asked to indicate “Yes” or “No” with respect to whether they had or did not have 11 different types of interest areas in their classrooms, so the classroom quality composite could have ranged from 0 to 11. The activity areas assessed included Reading area with books; Listening center; Writing center or area; Pocket chart or flannel board; Math area with manipulatives; Area for playing with puzzles and blocks; Water or sand table; Computer area; Science or nature area with manipulatives; Dramatic play area or corner; and Art area.

Use of activity centers generally is viewed as reflective of a child-centered approach to early education and more conducive to interactive, hands-on learning (Heaviside & Farris, 1993). Standardized scales and standards related to classroom quality typically tap similar areas. For example, the National Association for the Education of Young Children (2010) recommendations for minimum standards of quality include a measure of learning environments rich with physical resources. Also, the Activities subscale of the Early Childhood Environment Rating Scale - Revised (ECERS-R) uses a seven-point rating scale to describe ten activity areas – including those dedicated to art, blocks, sand/water, dramatic play, nature/science, math/number, and use of TV, video, and/or computers – that are an important dimension of the classroom environment (Dwyer, Chait, & McKee, 2000). Additionally, the ECERS-R Provisions for Learning subscale is a measure of children’s access to and use of appropriate learning materials (Harms et al., 1998), and the Learning Environment subscale of the Assessment Profile for Early Childhood Programs consists of a Yes/No observational checklist of learning areas available in the classroom environment (Dwyer et al., 2000). These recommendations and scales are commonly used in assessments of

classroom quality and provide support for the choice of items used in the current study for the classroom quality variable.

Teacher education. The teachers' highest level of education was obtained from the Teacher Questionnaire, and was coded as follows: High school diploma or GED (1); Associate's degree (2); Bachelor's (3); At least one year of graduate work (4); Master's (5); Education specialist or professional diploma post-Master's (6); and Doctorate (7).

Teacher ECE specialization. I examined whether study teachers' level of ECE specialization predicted children's outcomes. Teachers reported on their expertise in ECE, specifically whether they had completed college courses in ECE and whether they were certified in ECE. These responses were used to assign each teacher a score of (0) – neither completed ECE courses nor obtained ECE certification; (1) – either completed ECE courses or obtained ECE certification; or (2) – both completed ECE courses and obtained ECE certification. If teachers did not respond to either of these questions, the variable was coded as missing.

School readiness. The construct of school readiness was assessed using the School Readiness Composite (SRC) subscale of the Bracken Basic Concept Scale – Revised (BBCS-R). The BBCS-R (Bracken, 1998) is a 258 item, developmentally sensitive assessment of a child's knowledge of basic concepts. The BBCS-R is conducted in approximately 30 minutes and yields 11 subscale scores and 1 total test score. The SRC is comprised of the first six subscales and determines the child's knowledge of the following basic concepts: color; letter identification; number/counting; sizes; comparisons; and shape. The SRC subscale was selected for the current study because the six subscales of which it is composed collectively

represent the “readiness” concepts that parents and preschool programs traditionally teach in preparation for formal education. The BBCS SRC has been used in previous studies of school readiness, including the NICHD Study of Early Child Care and Youth Development (NICHD SECC, n.d.).

The SRC is reported as either a scaled or composite score. The scaled SRC ranges from 0-19. Scores between 7 and 13 represent average development, scores of 13 and above represent advanced development, and scores of seven and below represent delayed development. Composite scores range from 40-160. Composite scores that range between 85 and 115 represent average development, scores of 115 and above represent advanced development, and scores of 85 and below represent delayed development.

Internal consistency of the BBCS was computed using the split-half method with correction using the Spearman-Brown prophecy formula and yielded coefficients of .85 and .97 (across age levels) for the subscales and total test (Reynolds & Kamphaus, 2003). Test-retest correlations of .73 (obtained Pearson r) and .87 (r corrected for restriction in range) were obtained in a test of 3 to 5 year olds (Bracken, Harrison, Stanford, & Zahn, 1990).

Children completed the BBCS-R at the beginning and end of their kindergarten year; only data from the spring assessments are included in the current study.

Social skills and problem behavior. The constructs of social skills and problem behaviors were assessed using the Preschool and Kindergarten Behavior Scales - 2nd Edition (PKBS-2). The PKBS-2 is a 76 item Likert-type rating scale designed to measure both the problem behaviors and social skills of children ages 3-6 (Merrell,

1994). The PKBS-2 contains two major scales: social skills and problem behavior. The assessment takes 8-12 minutes to administer.

The PKBS-2 is interpreted by standard scores. Standard scores compare individuals from different grades or age groups. All standard scores for the PKBS-2 are based on a distribution with a mean of 100 and a standard deviation of 15. A standard score of 100 represents the mean score of a national normative sample. A higher standard score on the Social Skills Composite is desirable and indicates higher levels of social functioning. A lower Problem Composite Standard Score indicates less problematic behaviors. Internal consistency ranges from .84 to .97; test-retest values range from .62 to .87; and inter-rater reliability ranges from .36 to .63 (Merrell, 1994).

Teachers and parents completed the PKBS-2 for each child at the end of the kindergarten year. The results from the teacher assessments were used for the current analysis because teachers observe students in the structured classroom setting and view social competence and problem behavior in relation to the overall school and classroom environment. Teacher ratings lend insight into children's everyday performance in the classroom. There is evidence that parents and teachers rate children's social skills and behavior problems differently. In a study of kindergarten readiness (Zill & West, 2001), parents generally described their children as engaging in friendly or cooperative behavior more frequently than teachers did, and also were more likely to describe their children as often engaging in aggressive behavior. In line with previous research that has used teacher reports of social skills as a measure of children's social competence (e.g., NICHD ECCRN, 2002), I used the teacher ratings in the current analysis because I expected school, classroom, and teacher influences to have the greatest impact on

social skills and problem behavior in the school, rather than at home where parent perceptions might be more accurate.

Results

The data for the original study were entered into SPSS files for editing, storage, and analysis. A separate file was created that allowed me to examine the contribution of specific school-related variables (i.e., FARMS rate, classroom quality, teacher characteristics) to children's functioning at the end of kindergarten. To address the research questions in the current study, the following data analytic plan was followed. Descriptive analyses were conducted to ascertain the distribution and central tendency of variables. Associations among predictors and outcome variables were examined using correlations to provide basic descriptive information on the relations among variables. Next, multivariate analyses looked at the extent to which characteristics of the school, classroom, and teacher predicted children's school readiness, social skills, and problem behaviors.

Hierarchical regression was used to examine associations between predictors and outcomes. Blocks of predictors were entered into the model in the following order: (1) child characteristics (intervention status, gender, and race); (2) primary caregiver education; (3) school FARMS rate; (4) classroom quality; and (5) teacher characteristics (level of education and early childhood specialization). In this hierarchical model, contributions to prediction were evaluated for each block as it entered the model and for individual predictors within a block, controlling for predictors entered previously. Although this is not an ideal methodology, there is precedence for using hierarchical regression models to examine relationships between teacher and classroom characteristics and child outcomes (e.g., Pianta, 2005).

Preliminary Analysis

Preliminary analyses were conducted to examine the distributions of key predictor and outcome variables. On average, 87% of students at the study schools were eligible for free and reduced-priced meals. Both classroom quality and teacher education were generally high. Classrooms averaged 9.45 (out of a possible 11) on the classroom quality composite, with 50% of classrooms having 10 or 11 activity areas. All teachers in the study had at least a Bachelor's degree, and 41.6% had either a Master's degree or a post-Master's professional diploma. Close to 43% of teachers had both taken ECE courses and obtained ECE certification; however, approximately 12% had neither completed courses in ECE nor obtained certification. Data on the ECE specialization composite were missing for a quarter of the teachers in the study. See Table 2 for predictor variable descriptive statistics and Appendix A for the frequency distributions of the school, classroom, and teacher variables.

Table 2

Descriptive Statistics for Predictor Variables

	N	Mean	SD	Minimum	Maximum
School-wide FARMS Rate	200	80.71	11.82	72.00	99.60
Classroom Quality Composite	187	9.45	1.35	7	11
Teacher Education Level	192	4.25	.86	3	6
Teacher ECE Specialization Composite	152	1.41	.75	0	2

The mean BBCS-R School Readiness Composite score was 98.67, representing average development. The average PKBS Social Skills and Problem Behavior standard scores were 109.53 and 87.52 respectively, indicating that these children had better than

average social skills and lower than expected problem behavior. See Table 3 for descriptive statistics for these three outcome measures.

Table 3

Average School Readiness, Social Skills, and Problem Behavior Scores

	N	Mean	SD	Minimum	Maximum
BBCS School Readiness Composite	187	98.67	15.87	59	141
PKBS Social Skills	189	109.53	14.50	51	123
PKBS Problem Behavior	189	87.52	15.14	44	135

I was also interested in examining whether the children's demographic characteristics were related to their outcomes, and to determine whether any of these characteristics should be controlled for in the primary analysis. Indeed there were differences in outcomes by child gender, child race, and the primary caregiver's level of education. However, there was no significant difference in school readiness, social skills, or problem behavior between children who participated in the SPARK intervention and those who did not. See Appendix B for tables summarizing the results of these analyses.

Girls scored an average of five points higher on the school readiness assessment than boys ($p < .05$). Girls also demonstrated more social competence and less problem behavior; these results approached statistical significance ($p < .08$).

Hispanic/Latino children scored 10-12 points lower on the school readiness assessment than children of other racial backgrounds ($p < .05$). Hispanic/Latino children also scored five points lower than white children on the social skills assessment ($p < .05$).

ANOVA tests also revealed significant differences on the BBCS-R School Readiness Composite by primary caregiver's level of education ($p < .05$); however, post-

hoc comparisons could not be carried out to determine which groups differed on this measure because only one child had a parent in the “Attended graduate school” category.

Because differences were found between groups on specific demographic characteristics, I elected to include gender, race/ethnicity, and maternal education as control variables in the multivariate analyses. Although there was no significant difference between the intervention and control groups on the outcome variables, there was a difference between these two groups on the teacher education predictor variable ($p < .05$), and the difference on the teacher ECE specialization predictor variable approached significance ($p < .075$). The teachers of children who participated in the intervention tended to be more highly educated and specialized. Further, because the original study was an intervention evaluation, I elected to take a conservative approach and include intervention status as a control variable as well.

Table 4 displays the Pearson correlations. There were significant relationships amongst the predictor variables, with all of the predictor variables significantly related to each other ($p < .01$) *except* the school-wide FARMS rate and classroom quality and teacher education and ECE specialization. Both the school-wide FARMS rate and teacher education level were significantly correlated with all three outcome measures ($p < .01$). School-wide FARMS was positively correlated with social skills, and negatively correlated with school readiness and problem behaviors. Teacher education was negatively correlated with school readiness and problem behaviors, and positively related to social skills. Classroom quality was positively correlated with social skills ($p < .05$) and negatively with problem behavior ($p < .01$);. Teachers’ ECE specialization

was significantly and positively related to school readiness and negatively related to problem behavior ($p < .05$).

Table 4

Pearson Correlations between Predictor and Outcome Variables

Variables	1	2	3	4	5	6	7
1. School-wide FARMS Rate	-						
2. Classroom Quality Composite	.08	-					
3. Teacher Education Level	.51**	.26**	-				
4. Teacher ECE Specialization Composite	-.45**	.48**	.14	-			
5. BBCS School Readiness Composite	-.30**	-.10	-.23**	.19*	-		
6. PKBS Social Skills	.25**	.17*	.26**	.08	.19*	-	
7. PKBS Problem Behaviors	-.22**	-.20**	-.39**	-.18*	-.06	-.76**	-

*Note: * $p < .05$, ** $p < .01$*

School Readiness

Multivariate analyses were conducted to determine which of the school-related variables were related to children's school readiness at the end of kindergarten. After controlling for intervention status, child gender and race, and primary caregiver education, classroom quality and teacher's ECE specialization were significant predictors of students' BBCS-R SRC scores ($p < .05$). Students of teachers with more ECE specialization had higher school readiness scores. Additionally, with increasing classroom quality, school readiness scores decreased. The influence of child gender and primary caregiver education on this construct approached significance.

Table 5

Regression of School-wide FARMS Rate, Classroom Quality, Teacher Education, and Teacher ECE Specialization on School Readiness

	B	Std. Error	Beta	T	Sig.
Controls					
Intervention Status	-1.04	2.73	-.03	-.38	.71
Gender	-4.92	2.58	-.16	-1.91	.06
Race	.58	.57	.10	1.02	.31
Primary Caregiver Education	2.29	1.22	.16	1.88	.06
Predictors					
School-wide FARMS Rate	.10	.19	.07	.55	.59
Classroom Quality Composite	-3.37	1.21	-.31	-2.80	.01
Teacher Education Level	-2.95	2.15	-.15	-1.38	.17
Teacher ECE Specialization	7.69	2.76	.38	2.79	.01
<i>Note: R² = .169 (p<.05)</i>					

Social Skills

After controlling for intervention status, child gender and race, and primary caregiver education, I examined the contribution of the school-wide FARMS rate, teacher education, and teacher ECE specialization to children's teacher-rated social skills. None of the selected predictor variables accounted for significant variance in this outcome. Child race accounted for most of the variance ($p < .05$), and the contributions of intervention status and child gender approached significance.

Table 6

Regression of School-wide FARMS Rate, Classroom Quality, Teacher Education, and Teacher ECE Specialization on Children's Teacher-rated Social Skills

	B	Std. Error	Beta	T	Sig.
Controls					
Intervention Status	-4.83	2.70	-.16	-1.79	.08
Gender	-4.47	2.56	-.15	-1.75	.08
Race	-1.29	.57	-.21	-2.28	.02
Primary Caregiver Education	-1.16	1.21	-.08	-.96	.34
Predictors					
School-wide FARMS Rate	.26	.18	.18	1.47	.14
Classroom Quality Composite	1.65	1.20	.15	1.38	.17
Teacher Education Level	2.73	2.07	.14	1.32	.19
Teacher ECE Specialization	1.97	2.64	.10	.75	.46
<i>Note: R² = .173 (p<.05)</i>					

Problem Behavior

School-wide FARMS rate, teacher's level of education, and teacher's level of ECE specialization all contributed to children's teacher-rated problem behavior ($p < .05$). Child race accounted for a significant portion of the variance in problem behavior as well ($p < .05$). The controls and predictors together accounted for one-third of the variance in children's problem behavior scores.

Table 7

Regression of School-wide FARMS Rate, Classroom Quality, Teacher Education, and Teacher ECE Specialization on Children's Teacher-rated Problem Behavior

	B	Std. Error	Beta	T	Sig.
Controls					
Intervention Status	3.21	2.54	.10	1.26	.21
Gender	3.69	2.41	.11	1.54	.13
Race	1.77	.54	.28	3.30	.00
Primary Caregiver Education	1.75	1.14	.12	1.53	.13
Predictors					
School-wide FARMS Rate	-.38	.16	-.25	-2.31	.02
Classroom Quality Composite	-.89	1.12	-.08	-.80	.43
Teacher Education Level	-7.02	1.95	-.34	-3.60	.00
Teacher ECE Specialization	-5.85	2.44	-.27	-2.40	.02
<i>Note: R² = .333 (p<.05)</i>					

Summary

These results indicate that school readiness and social competence differ by child gender, race, and primary caregiver education. After controlling for these factors, school FARMS rate and teacher education and specialized preparation were significant predictors of teacher-rated problem behavior. Additionally, classroom quality was negatively related to school readiness. Finally, teacher ECE specialization was related to both school readiness and problem behavior. None of the selected predictors explained a significant amount of the variance in teacher-rated social skills, though child race was significantly related to this outcome and intervention status and child gender approached significance.

Discussion

The current study sought to explore how selected school, classroom, and teacher characteristics affected children's functioning in kindergarten. Specifically, I examined the influence of socioeconomic status, classroom quality, and teacher education on children's academic readiness and social skills. As anticipated, children in classrooms with teachers who had more preparation in child development and ECE had better school readiness skills. Children in these classrooms and in classrooms with more highly educated teachers also demonstrated fewer problem behaviors.

Contrary to expectations, children in higher quality classrooms did worse than children in lower quality classrooms on assessments of academic school readiness. Additionally, children in schools with higher concentrations of low-income students had fewer problem behaviors as reported by their teachers. Further, differences in children's social competence were not related to the quality of the classrooms, the level of education and early childhood expertise of the teachers, or the concentration of low-income students in the school. Instead, child race was the variable most responsible for children's social skills, and also played a role in children's problem behavior.

The Role of School-wide Economic Disadvantage

The FARMS variable played an interesting role in the current analyses: sometimes it contributed to outcomes as expected, but other times it contributed in unexpected ways. Students in schools with higher concentrations of students from impoverished backgrounds performed worse on measures of school readiness. This is consistent with the literature that children who attend school in impoverished neighborhoods tend to have lower academic outcomes (Lee & Burkham, 2002; Zill &

West, 2001). Schools in low-income neighborhoods may lack the monetary and personnel resources necessary to educate students (Greenwald et al., 1996; Jacob & Ludwig, 2008). Additionally, qualities of the neighborhoods in which these schools are located may adversely affect these children's cognitive development (Leventhal & Brooks-Gunn, 2000).

However, school FARMS rate was correlated with social skills and problem behavior in the opposite direction as was expected. Generally, low-income students are found to have more problem behaviors (Lee & Burkham, 2002) and poorer social skills (Zill & West, 2001). There is consistent evidence that children in high FARMS schools perform worse on these types of measures because the ecological stressors experienced by young children in poverty jeopardize their ability to regulate their emotions and behavior (Raver, 2004). To the contrary, my results indicate that children in schools with higher FARMS levels were rated by their teachers as having better social skills and problem behavior than students in lower FARMS schools.

First, it is important to note that all of the schools included in this study had relatively high FARMS rates, ranging from 72% to 99.4%. As with teacher education, this low variability makes it difficult to discern differences in outcomes based on FARMS rates.

Aside from this statistical caveat, some research indicates that high quality center-based care may be especially beneficial for the socioemotional development of low-income children, serving as a kind of mental health intervention. These types of programs follow the Pyramid Model, an adaptation of the public health promotion, prevention and intervention framework used in early childhood specifically related to

social, emotional, and behavioral development (Fox, Dunlap, Hemmeter, Joseph, & Strain, 2003). The Pyramid Model provides guidance for early education and intervention programs on the practices necessary to promote young children's healthy social and emotional development, prevent problem behavior, and provide individualized intensive interventions when necessary. In this model, universal promotion practices include providing all families with information on how to develop nurturing and responsive care giving relationships and providing high quality supportive environments to all children; prevention practices include targeted social emotional supports for children at-risk of poor social emotional development and challenging behavior; and treatment practices involve intensive interventions to children who have mental health needs and/or persistent challenging behavior.

For example, Head Start provides comprehensive child development services to economically disadvantaged children and families and engages parents in their children's learning. The conceptual framework includes involving parents in the decision-making, linking children and families to needed community services, and strengthening families as the primary nurturers of their children. Evidence from Head Start indicates that the program may play a role in protecting children and families from the consequences of multiple risk factors. Participation in Head Start is associated with gains in cooperative classroom behavior and reductions in hyperactive behavior and findings support the theory that children's school readiness is enhanced when programs work with families as well as with children (Zill et al., 2003).

Systems of care, another variation of the Pyramid Model, are also an effective means of attending to the socioemotional needs of children. Systems of care focus on

providing family-driven, culturally and linguistically competent, and evidence-based services and supports by facilitating coordination among service providers and working with families to develop individualized service plans for their children that build on child and family strengths (U.S. Department of Health and Human Services, 2004). Data from the national evaluation of the system of care program demonstrate improvements in social and emotional functioning, as well as in school performance and attendance, from program entry to 6 months after beginning services, with improvements remaining after 18 months (U.S. Department of Health and Human Services, 2004). Further, tailoring programs and services to individual child needs can promote the success of young children in preschool and school environments (The Kauffman Early Education Exchange, 2002).

Given evidence of the benefits of Head Start and systems of care on the social and emotional development of children, one plausible explanation for the positive relationship between school FARMS rate and social skills is that the children in the higher FARMS schools participated in early care and education experiences that engaged in practices to promote their healthy socioemotional development, prevent adverse development, and intervene with those children who exhibited challenging behaviors. Evidence from studies of Head Start and systems of care suggests that such experiences would result in better social skills and fewer problem behaviors for these children.

Another plausible explanation for the unexpected direction of the relationship between schools' concentration of low-income students and children's socioemotional outcomes relates to the quality of the relationships between these children and their

teachers. There is evidence that the quality of teacher-child relationships is associated with teacher-rated social competence (Pianta et al., 2002). Perhaps the teachers in the high-poverty schools included in this study were able to form close relationships with their students, thereby enhancing the students' social competence (Birch & Ladd, 1998).

Relationship between Classroom Quality and Children's Outcomes

The findings on classroom quality were equivocal. Consistent with some of the literature on kindergarten classrooms, the classrooms in the current study were generally high in quality (Clifford et al., 2005), and quality was positively correlated with teacher education and specialization (Pianta et al., 2005). However, with increasing classroom quality, school readiness scores decreased. This is the opposite of what I expected since generally high classroom quality is associated with better school readiness outcomes (e.g., Bryant, 1994; Hamre & Pianta, 2005; Howes, 1990; Howes et al., 2008; Loeb et al., 2004; NICHD ECCRN, 2002; Pianta et al., 2005).

There are several potential explanations for this finding. The classroom quality composite used in the present study is a measure of the structural quality of the classrooms; its effects on students' outcomes are likely mediated by unmeasured process features in the classroom (NICHD ECCRN, 2002). Researchers have hypothesized that structural quality creates conditions in the classroom that allow high quality teacher-child interactions to exert stronger positive effects on child outcomes (Mashburn et al., 2008). We know that at least one aspect of process quality important for school readiness, instructional support, tends to be low in kindergarten classrooms (La Paro et al., 2009). It is possible that although these classrooms

demonstrated high structural quality, important processes like instructional support, which was not measured in the current study, were still lacking.

There is evidence that kindergarten classrooms score lower on the Provisions for Learning subscale of the ECERS-R than pre-K classrooms because kindergarten classrooms have fewer activity areas and devote more time to direct instruction (La Paro et al., 2009; Pianta et al., 2005). Consequently, it is possible that the classrooms that scored lower on classroom quality (i.e., the classrooms with fewer activity areas) engaged in more direct instruction and had higher levels of instructional support in the classrooms contributing to better school readiness outcomes. If true, this would suggest that kindergarten teachers should focus more on aspects of instructional quality and engage in more direct instruction to achieve better academic outcomes for children.

Another possibility is that classrooms with more activity areas actually enhanced unmeasured dimensions of children's school readiness. The cognitive/academic school readiness measure used in the current study assessed children's acquisition of specific skills, i.e., color, letter identification, number/counting, sizes, comparisons, and shape, rather than more general executive functions and approaches to learning. Research supports the premise that classrooms employing a constructivist approach to learning facilitate the development of executive functions such as impulse control, working memory, and cognitive flexibility (Diamond et al., 2007), which are as important to school readiness as more discrete, specifically academic skills (Bierman et al., 2008; Blair, 2002). It is possible that a school readiness measure examining these aspects of school readiness would have found a positive relationship between the number of activity areas in the classroom and school readiness.

It should also be noted that simply measuring the quantity of activity and learning centers in the classroom is not the same as measuring the quality of the centers, i.e., how the centers are structured and used in the classroom and their associated instructional value. Classrooms with centers that are not used appropriately are likely no higher in quality than classrooms with no centers at all.

Relationship between Teacher Education and Specialization and Children's

Outcomes

There is a lot of controversy as to whether teacher education makes a difference for children's outcomes. Some researchers have found a link between teacher education and process quality (La Paro et al., 2009; Pianta et al., 2005) which is generally predictive of children's outcomes (NICHD ECCRN, 2002, Pianta et al., 2002). Pianta et al. (2005) found that pre-K teachers' education was related to classroom quality. Similarly, La Paro et al. (2009) found that kindergarten teachers with higher levels of education provide higher levels of instructional support, though teacher psychological variables were more predictive of quality. However, other researchers have found that teacher education and child development expertise are not related to classroom quality and children's academic outcomes (Howes et al., 2008; Early et al., 2007; Early et al., 2006). Howes et al. (2008) did not find a relation between teacher education and academic gains, and Early et al. (2006, 2007) found mostly null associations between teacher education and early childhood specialization and classroom quality and children's academic outcomes. Some studies (e.g., Clifford et al., 2005) have even found that higher levels of teacher education are related to significant academic gains for children in the absence of process quality.

My results suggest that both teacher education and early childhood expertise are positively related to classroom quality. Additionally, ECE specialization was a significant predictor of both children's school readiness skills and problem behavior, and teacher education predicted problem behavior. Although we do not have a clear picture of the range in quality of teacher preparation programs, it is likely that these teachers receive specialized preparation in developmentally appropriate practices which promote children's academic school readiness.

It is also important to note here that there was a skewed distribution with respect to teacher education in the classrooms sampled, with 100% of teachers having at least a Bachelor's degree. Due to the high level of teachers' educational attainment, it would be difficult to find significant relationships between teacher education and child outcomes. Previous research has demonstrated that the K-12 system recruits more educated teachers (Heaviside & Farris, 1993). The good news here is that kindergarten children of all socioeconomic backgrounds are receiving instruction from more highly qualified teachers.

In the current study, schools with higher FARMS rates had better educated teachers, but these teachers were also less specialized. Prior research has found that pre-schools with high concentrations of low-income students tend to have less educated teachers (Clifford et al., 2005), but also that kindergarten teachers, who are part of public school systems, tend to be more educated (Heaviside & Farris, 1993). All teachers in the study had at least a Bachelor's degree, and 41.6% had either a Master's degree or a post-Master's professional diploma.

Relationship between Child and Family Factors and Children's Outcomes

Although the current study was not focused on the contributions of child and family factors to school readiness and social competence, certain findings merit discussion. Specifically, the findings with respect to gender and race are important to consider.

The contributions of gender and primary caregiver education to child outcomes both approached significance. If the sample were larger, these associations would probably be significant. Research consistently shows that maternal education is one of the strongest predictors of children's cognitive development (Guo & Harris, 2000; Haveman & Wolfe, 1995). Effects of gender on school readiness outcomes are less clear, with some evidence that gender is not a significant predictor of academic readiness (Gullo & Burton, 1992), and other evidence that acquisition of specific reading and math skills varies by gender (Denton & West, 2002). It would be important to explore this relationship further in future studies.

Although children's teacher-reported social skills were significantly and positively correlated with FARMS-eligibility rates, classroom quality, and teacher education level, none of these variables were related to children's social skills after controlling for child and family characteristics. Race was the only variable included in the regression that emerged as significant. Post-hoc comparisons revealed that Latino students function worse than white students with regard to social skills. This contrasts with recent research that finds that a majority of Latino children enter kindergarten with the same social skills as middle-class white children, while low-income Latinos demonstrate stronger social skills than low-income African American kindergartners at

the start of school, presumably due to the socialization processes of Hispanic/Latino families (Galindo & Fuller, 2010).

One possible explanation for the discrepant findings may lay in the unmeasured early care and education experiences of the sample Hispanic/Latino children prior to kindergarten entry. Researchers have found that Hispanic/Latino families generally select informal kin care over center-based care because it is more in line with their cultural norms (Radey & Brewster, 2007), and that family care arrangements generally do not produce the same cognitive gains as center-based care, especially for disadvantaged groups (Magnuson, et al., 2004). Loeb et al. (2004) found that children in family child care homes show more behavioral problems. Researchers have also found that due to cultural and language barriers, Hispanic/Latino families tend not to participate in social services when their children do attend center-based care, which is reflected in the children's poorer outcomes (Kalil & Chen, 2008). Additionally, a particular aspect of child care quality, relationship-focused care, is predictive of less adaptive functioning for Hispanic/Latino children but not related to functioning among African American children (Owen, Klausli, Mata-Otero, & Caughy, 2008). Perhaps the Hispanic/Latino children in this sample attended low-quality family care arrangements prior to kindergarten, or did not take full advantage of the referrals and supports offered by center-based care, putting these children at a deficit in their social skills development.

Further, 69% of the Hispanic/Latino students included in this study attended school in the state of New Mexico. New Mexico's Child Care Quality Rating System (QRS) Assessment (Child Trends, 2010) indicates that of the 70% of participating

center-based and family child care programs in the state, the majority (77%) have only achieved one or two out of a possible five stars, and only 19% have achieved four or five stars. This implies that lower quality care is available to most children in the state. The report also indicates there are no quality indicators in the QRS related to cultural and linguistic diversity, so even the highest rated centers may not be employing culturally-appropriate practices for Hispanic/Latino children and families. Future research should investigate possible moderation effects of early care and education experiences when exploring social competence in low-income Hispanic/Latino children.

Although the current analyses controlled for intervention status, some discussion of the influence of the intervention is warranted. Overall, there was no significant effect of the SPARK initiative on the outcomes of interest in this study. However, a strong trend implied that intervention status mattered for social skills. The goal of the SPARK initiative was to get children ready for schools and schools ready for children. Intervention sites provided both direct services to children and quality improvement services to schools such as professional education, curriculum development, and accreditation support. It therefore makes sense that children who participated in the intervention benefited from the better prepared teachers and higher classroom structural quality. Additionally, a finding documented in the SPARK initiative final follow-up report was that children who received the intervention participated in more early learning experiences prior to kindergarten entry (Walter R. McDonald & Associates, 2009). Previous research suggests that children who participate in such early learning activities have better academic and social outcomes (Lee & Burkham, 2002; NICHD ECCRN, 2003; NICHD ECCRN, 2005). The finding that approached significance in

this study - that children who participated in SPARK had better social skills - corroborates these findings to some extent. However, it is notable that intervention status had no discernable effect on school readiness and problem behaviors.

Limitations and Future Directions for Research

Although this study documents the salience of ecological factors for children's school readiness across domains, there were limitations to the study that should be identified. One of the main limitations is that the regression analyses used did not account for nesting effects. Since data were collected from children sharing classrooms, and teachers within the same schools, hierarchical linear modeling (HLM) that accounts for shared variance within classrooms and within schools would have been a more appropriate approach to answering the research questions. HLM adjusts for dependencies in the data when multiple children from the same classroom and multiple teachers from the same school are included in analyses, and is the preferred means of taking the nesting of children in classrooms into account through estimating between children and within-classroom variability (e.g., Howes et al., 2008). I chose to use regression here because, given the relatively small sample size, there was not sufficient statistical power to detect differences in outcomes among students using the HLM procedure.

Another concern here is the amount of missing data for key study variables. Missing data are a reality in secondary data analysis, and the rates of missing data are somewhat high for a few variables, particularly the primary caregiver education level (14.7% missing), and teachers' ECE specialization (25.5%). Regarding the ECE specialization composite, data were coded as missing if the teacher did not respond to

both questions in the Teacher Questionnaire regarding college courses in ECE and state certification in ECE. It is possible that teachers who responded to one of the questions but not the other are different from teachers who did not respond to both questions. An analysis that separated these two groups of teachers may have produced quite different results. These high rates of missing data reduced my ability to adequately account for background differences in children and measure differences between teachers. Future research on this topic could capitalize on an original study population in which missing data could be recovered throughout the data collection process.

Certain characteristics known to affect classroom quality and kindergarten children's school readiness skills were not accounted for in the current analysis because they were beyond the scope of the study. These include additional family characteristics, such as the children's home learning environments and quality of the children's neighborhoods; learning activities in the year prior to kindergarten, such as whether children participated in center-based care or Head Start; and additional structural characteristics of the kindergarten classroom environment, such as teacher: child ratio, teachers' years of teaching experience, and whether the class was full-day or part-day. Not including these measures as controls may introduce bias in that those unmeasured variables may be driving the correlation between school, classroom, and teacher quality and children's school readiness outcomes. In fact, previous research has demonstrated that a significant amount of the impact of teacher education on classroom quality disappears when more aggressive controls are included (Phillips et al., 2001). On the other hand, controlling for primary caregiver education may encompass many of the unmeasured family characteristics, and using the intervention status as a control

variable may have accounted for at least some of the unmeasured early learning experiences.

Finally, no measure of process quality in the classrooms was included in the current study. NICHD ECCRN (2002) found support for a mediated pathway between the structural qualities of classrooms that were investigated here (e.g., teacher education and the learning environment) and child outcomes via the processes that children directly experience in the classrooms. Research has consistently shown that qualities of teacher-child interactions are directly tied to children's academic and social outcomes. For example, La Paro et al. (2009) found that one-third of kindergarten classrooms rate high in emotional supports. Had I included a measure of this process feature of classroom quality, a direct relationship between process quality and teacher-rated social skills may have become evident. Also because no measures of process quality were included, we are left without data that could explain why students in quality kindergarten settings had worse school readiness outcomes.

Practice and Policy Implications

The current study focused on the unique and additive contributions of ecological factors, such as school, classroom, and teacher characteristics, on young children's kindergarten performance. Given my findings that teacher education and teacher preparation in child development/ECE both correlate with classroom quality and predict lower problem behaviors, and that teachers with more preparation in early childhood teach children who are more ready for school, policy makers should not only continue to support advanced education for kindergarten teachers, but also promote child-centered knowledge and beliefs among kindergarten teachers. Specialization is

important for children's outcomes, but only when knowledge of child development translates into developmentally appropriate teaching practices. Therefore, leaders should implement professional development activities that meaningfully teach concepts of child development. These activities should include intensive mentoring and coaching components to ensure that the concepts translate into classroom practice, and ongoing evaluation activities to monitor the effectiveness of the professional development activities (Fixsen, Naoom, Blasé, Friedman, & Wallace, 2005).

Given the present findings that my measure of classroom quality, i.e. the presence of specific activity centers in the classroom, is negatively related to children's school readiness skills, activity centers may be less important in kindergarten classrooms than in early care and education settings. It could be that process quality is even more important at this stage of children's development, especially in low-income settings. One implication would be to devote more time to teacher-directed and small group instruction which might promote more beneficial instructional teacher-child interactions and lead to gains in children's cognitive outcomes and social skills (Camilli et al., 2010).

In the current study, children in poorer schools demonstrated better socioemotional outcomes, although the reason for this relationship is unclear. If the children in poor schools participated in the types of early care and education experiences prior to kindergarten that act as mental health interventions for disadvantaged families with multiple risks, then leaders should implement more family-focused programs in poor neighborhoods that follow the pyramid framework to promote healthy socioemotional development, prevent adverse development, and intervene early

with children exhibiting challenging behaviors. If the relationship between poor schools and healthy socioemotional outcomes is due to the quality of teacher-child relationships, this would suggest that leaders should establish professional development activities that provide teachers with the skills needed to connect with poor students.

As many researchers continue to document, I found that children in schools with higher concentrations of low-income students had poorer academic school readiness skills. In addition, these children's teachers were less likely to have taken college courses in child development or to be certified in ECE. These findings argue for even more targeted professional development for teachers in low-income neighborhoods. Additionally, and in line with previous research on school quality in low-income neighborhoods (Greenwald et al., 1996; Jacob & Ludwig, 2008), administrators in these schools might benefit from training and technical assistance in managing funds and expenditures, and in implementing new organizational practices.

Further, neighborhoods are thought to exert their effects on children's academic outcomes through the adaptive and maladaptive social processes operating within them, such as collective efficacy, social control, social cohesion, and social support (Jencks & Mayer, 1990; Sampson and Raudenbush, 1999; Swisher, 2008). These social processes influence more proximal family processes which, in turn, are directly associated to children's outcomes (Brown & Lynn, 2003; Burchinal, Follmer & Bryant, 1996; Emory, Caughy, Harris, & Franzini, 2008; Klebanov, Brooks-Gunn, McCarton, & McCormick, 1998; Kohen, Leventhal, Dahinten, & McIntosh, 2008; Marshall, Noonan & McCartney, 2001). Interventions that enhance adaptive social processes in poor neighborhoods may result in better academic outcomes for children residing in those neighborhoods.

Of course, characteristics of schools, classrooms, and teachers do not totally explain gaps in academic performance between poor and non-poor children. In fact, close to 40% of the associations between economic disadvantage and young children's lower academic performance are explained by the lower quality of home learning environments (Smith, Brooks-Gunn, & Klebanov, 1997). However, school-based interventions that target the features of schools examined in the current study might help compensate for a less stimulating home environment. For example, the school choice provision of No Child Left Behind (U.S. Department of Education, 2008) might mitigate the high concentrations of students from impoverished backgrounds in some schools. Further, targeted professional development programs could improve classroom and teacher quality (Lemoine, 2008).

Schools might also benefit from extending funding for professional development in early education to principals. Research indicates that elementary school administrators often lack background in early-childhood development (see National Association of Elementary School Principals, 2005). Enhancing principals' knowledge of developmentally-appropriate practices for younger students would help build strong relationships between early childhood educators and elementary school leaders and encourage support of teachers from the highest levels.

Conclusions

The present study found that children's academic school readiness skills in the spring of their kindergarten year were associated with teachers' preparation in child development and early childhood education; that children's problem behaviors were related to the school's concentration of low-income students and teachers' level of

education and early childhood preparation; and that child race was significantly related to children's social skills and problem behaviors.

These findings corroborate and extend findings that have been documented in the early childhood education literature. Specifically, the evidence herein implies that characteristics of the teachers recruited to practice in the early childhood system continue to be important factors in children's school readiness, in particular their background and preparation in early childhood development. In addition, poverty was found to be an important influence on children's academic skills. In contrast, the findings from this study suggest that some aspects of classroom quality (i.e., centers; play activities) may not be as influential for the school readiness skills that allow children to be successful in the current educational context.

In terms of the academic achievement for children who are disadvantaged (i.e., children who are racial/ethnic minorities, whose parents have lower educational attainment, and/or who are from low-income families), the findings confirm the need for quality interventions to ensure their school success, at the levels of the teacher, classroom, and school. The findings also point to promising foundations on which to build these interventions, including the better than average social skills and lower rates of problem behavior among these children, and the high education levels of their teachers. If our educational system is to be the "great equalizer" allowing children from disparate backgrounds to achieve their full potential, we need to understand and exploit those factors that promote the early development of skills which build the foundation for successful life outcomes.

Appendix A: Response Rates and Frequency Distributions

Table A1

Response Rates for all Control, Predictor, and Outcome Variables

	Valid (%)	Missing (%)
Control Variables		
Intervention Status	204 (100)	0 (0)
Gender	204 (100)	0 (0)
Race	186 (81.2)	18 (8.8)
Primary Caregiver Education Level	174 (85.3)	30 (14.7)
Predictor Variables		
School FARMS Rate	200 (98)	4 (2)
Classroom Quality Composite	187 (91.7)	17 (8.3)
Teacher Education Level	192 (94.1)	12 (5.9)
Teacher ECE Specialization Composite	152 (74.5)	52 (25.5)
Outcome Variables		
BBCS School Readiness Composite	187 (91.7)	17 (8.3)
PKBS Social Skills	189 (92.6)	15 (7.4)
PKBS Problem Behavior	189 (92.6)	15 (7.4)

Table A2

Frequencies for Predictor Variables

	N (%)
School-wide FARMS Rate	
72.00	65 (31.9)
72.60	66 (32.4)
91.50	24 (11.8)
98.90	7 (3.4)
99.20	9 (4.4)
99.60	29 (14.2)
Missing	4 (2.0)
Classroom Quality Composite	
7	20 (9.8)
8	33 (16.2)
9	31 (15.2)
10	49 (24.0)
11	54 (26.5)
Missing	17 (8.3)
Teacher Education Level	
Bachelors	45 (22.1)
At least 1 year course work beyond Bachelors but not a grad degree	62 (30.4)
Masters	77 (37.7)
Education specialists or professional diploma	8 (3.9)
Missing	12 (5.9)
Teacher ECE Specialization Composite	
No courses, no certification	24 (11.8)
Either course OR certification	41 (20.1)
Course AND certification	87 (42.6)
Missing	52 (25.5)

Appendix B: Analysis of Control Variables

Table B1

Average School Readiness, Social Skills, and Problem Behavior Scores by Intervention Status

Intervention Status	BBCS School Readiness Composite		PKBS Social Skills		PKBS Problem Behavior	
	Mean	SD	Mean	SD	Mean	SD
SPARK	99.09	16.02	105.62	10.69	99.13	13.02
Comparison	98.17	15.78	104.01	11.35	98.20	15.56

Table B2

ANOVA for Differences by Intervention Status in Outcome Variables

Outcome Variables	<i>df</i>	<i>F</i>	<i>p</i>
BBCS School Readiness Composite	1, 185	.154	.70
PKBS Social Skills	1, 171	.910	.34
PKBS Problem Behavior	1, 165	.177	.67

Table B3

Average School Readiness, Social Skills, and Problem Behavior Scores for Females and Males

	BBCS School Readiness Composite		PKBS Social Skills		PKBS Problem Behavior	
	Mean	SD	Mean	SD	Mean	SD
Female	101.37	15.92	106.60	10.31	96.89	12.68
Male	95.88	15.42	103.13	11.45	100.75	15.51

Table B4

ANOVA for Gender Differences in Outcome Variables

Outcome Variables	<i>df</i>	<i>F</i>	<i>p</i>
BBCS School Readiness Composite	1, 185	5.729	.02
PKBS Social Skills	1, 171	4.386	.80
PKBS Problem Behavior	1, 165	3.126	.80

Table B5

Average School Readiness, Social Skills, and Problem Behavior Scores by Child Race

Race	BBCS School Readiness Composite		PKBS Social Skills		PKBS Problem Behavior	
	Mean	SD	Mean	SD	Mean	SD
African American	101.55	11.25	108.68	8.19	98.86	16.12
Asian, Native Hawaiian, or Pacific Islander	101.30	15.54	102.43	13.69	101.37	15.54
Hispanic/Latino	90.95	15.81	102.39	10.63	97.60	12.35
White	103.70	13.88	108.04	8.07	98.26	13.88

Table B6

ANOVA for Differences by Race in Outcome Variables

Outcome Variables	<i>df</i>	<i>F</i>	<i>p</i>
BBCS School Readiness Composite	3, 172	8.074	.00
PKBS Social Skills	3, 162	4.073	.01
PKBS Problem Behavior	3, 157	.591	.62

Table B7

Bonferroni Comparisons for Racial Differences in Outcome Variables

Comparisons	Mean Score Difference	Std. Error	95% CI	
			Lower Bound	Upper Bound
BBCS School Readiness Composite				
African American vs. Hispanic/Latino	10.60*	3.67	.79	20.40
Asian, Native Hawaiian, and Pacific Islander vs. Hispanic/Latino	10.35*	2.87	2.68	18.01
White vs. Hispanic /Latino	12.75*	2.87	5.09	20.42
PKBS Social Skills				
Hispanic/Latino vs. White	-5.65*	2.11	-11.29	-.01
<i>Note: * p < 0.05</i>				

Table B8

Average School Readiness, Social Skills, and Problem Behavior Scores by Primary Caregiver Education Level

	BBCS School Readiness Composite		PKBS Social Skills		PKBS Problem Behavior	
	Mean	SD	Mean	SD	Mean	SD
Primary Caregiver Education Level Did not complete HS	90.78	13.67	105.89	8.23	98.21	10.33
HS Diploma	100.58	17.06	102.36	13.30	99.45	16.11
Some College	99.90	13.99	107.18	9.17	101.02	14.03
Completed College	99.00	13.32	108.50	8.22	94.50	9.49
Attended Graduate School	121.00	.	105.00	.	110.00	.
Completed Graduate School	114.60	12.70	112.00	3.39	88.00	8.19

Table B9

ANOVA for Differences by Primary Caregiver Education Level in Outcome Variables

Outcome Variables	<i>df</i>	<i>F</i>	<i>p</i>
BBCS School Readiness Composite	5, 158	3.52	.01
PKBS Social Skills	5, 148	1.81	.11
PKBS Problem Behavior	5, 143	1.18	.32

Appendix C: SPARK Parent/Child Demographic Survey

<i>Items a-p to be completed by RKF staff</i>							
a	Site:	<input type="checkbox"/> DC	<input type="checkbox"/> FL	<input type="checkbox"/> GA	<input type="checkbox"/> HI	<input type="checkbox"/> NM	<input type="checkbox"/> OH
b	Child Identifier:						
c	Interviewer:						
d	Interview Date:						
e	Data entry person:						
f	Date data entered:						
g	Date child entered RKF:						
h	RKF Cohort: <input type="checkbox"/> First <input type="checkbox"/> Second						
i	RKF status: <input type="checkbox"/> SPARK Child <input type="checkbox"/> Comparison Child						
j	Date enrolled in SPARK:						
k	<p>Primary (most hours attended) ECE setting (2009-2010 school year). Check <u>one</u>.</p> <p>Head Start: <input type="checkbox"/></p> <p>Public Pre-K: <input type="checkbox"/></p> <p>Private for profit Pre-K: <input type="checkbox"/></p> <p>Private non-profit Pre-K: <input type="checkbox"/></p> <p>Other/Family-child interaction: <input type="checkbox"/></p> <p>In home—no other ECE: <input type="checkbox"/></p>						

l	<p>Secondary (next most hours attended) ECE setting (2009-2010 school year). Check <u>all</u> that apply.</p> <p>Head Start: ___</p> <p>Public Pre-K: ___</p> <p>Private for profit Pre-K: ___</p> <p>Private non-profit Pre-K: ___</p> <p>Other/Family-child interaction: ___</p> <p>In home—no other ECE: ___</p>
m	<p>Primary (most hours attended) ECE setting (Summer 2010). Check <u>one</u>.</p> <p>Head Start: ___</p> <p>Public Pre-K: ___</p> <p>Private for profit Pre-K: ___</p> <p>Private non-profit Pre-K: ___</p> <p>Other/Family-child interaction: ___</p> <p>In home—no other ECE: ___</p>
n	<p>Secondary (next most hours attended) ECE setting (Summer 2010). Check <u>all</u> that apply.</p> <p>Head Start: ___</p> <p>Public Pre-K: ___</p> <p>Private for profit Pre-K: ___</p> <p>Private non-profit Pre-K: ___</p> <p>Other/Family-child interaction: ___</p> <p>In home—no other ECE: ___</p>

o	<p>Check all programs/interventions that the child has participated in. Check <u>all</u> that apply.</p> <p>Healthy Start: ___</p> <p>Punana I Na Keiki: ___</p> <p>HIPPY: ___</p> <p>Keiki Steps: ___</p> <p>Punano Leo: ___</p> <p>ELI: ___</p> <p>Kindercamp: ___</p> <p>Escuelita: ___</p> <p>Other: ___ (Please explain: _____)</p>
p	<p>SPARK interventions provided to this child. Check <u>all</u> that apply.</p> <p>Learning advocate: ___</p> <p>Consultation to ECE setting: ___</p> <p>Initial developmental screening: ___</p> <p>Initial developmental assessment: ___</p> <p>SPARK developed learning plan: ___</p> <p>Home visits: ___</p> <p>PAT (Parents as Teachers): ___</p> <p>Health screening: ___</p> <p>Books, school supplies, other learning material: ___</p> <p>Grant to ECE setting: ___</p> <p>Accreditation assistance to ECE setting: ___</p> <p>Prelearning workshops and/or activities: ___</p>

Confidential Parent Survey

1	Name of school your child attends:

2	Name (first and last) of your child's teacher:
3	Your child's birth date:
4	Your child's sex: <input type="checkbox"/> Male <input type="checkbox"/> Female
5	Was your child born in the in the United States? <input type="checkbox"/> Yes <input type="checkbox"/> No
6	Do you consider your child to have special needs? <input type="checkbox"/> Yes <input type="checkbox"/> No
7	If you answered yes, please describe your child's special needs: _____ _____ _____
8	Does your child have an IEP? <input type="checkbox"/> Yes <input type="checkbox"/> No
9	The following questions ask about your child's racial/ethnic background. <u>Please check all that apply.</u> <input type="checkbox"/> African-American <input type="checkbox"/> Asian <input type="checkbox"/> American Indian: Specific tribal/pueblo affiliation _____ <input type="checkbox"/> Native Hawaiian <input type="checkbox"/> Pacific Islander <input type="checkbox"/> Hispanic/Latino: Specific origin (Mexico, Cuba, etc.) _____ <input type="checkbox"/> White <input type="checkbox"/> Other _____ _____
10	Would you say your child's health is <input type="checkbox"/> Excellent <input type="checkbox"/> Very good <input type="checkbox"/> Good <input type="checkbox"/> Fair <input type="checkbox"/> Poor

11	Would you say it is difficult for you get the medical care your child needs? <input type="checkbox"/> Yes <input type="checkbox"/> No
12	Is your child limited or prevented from doing most things a child his/her age can do? <input type="checkbox"/> Yes <input type="checkbox"/> No
13	Does your child currently use medicine prescribed by a doctor, other than vitamins? <input type="checkbox"/> Yes <input type="checkbox"/> No
14	If yes, is this for a condition expected to last 12 months or longer? <input type="checkbox"/> Yes <input type="checkbox"/> No
15	Please check all the following transition to school activities in which you or your child participated during the spring/summer of 2010 (before the school year started): <input type="checkbox"/> Information provided to parents about kindergarten <input type="checkbox"/> Spring sign-up for kindergarten <input type="checkbox"/> Summer camp <input type="checkbox"/> Kindergarten teacher visited your home <input type="checkbox"/> Your child visited a kindergarten classroom <input type="checkbox"/> You were informed about which schools your child could attend <input type="checkbox"/> Other (please describe _____)
16	Please check all the following transition to school activities in which you or your child participated during the fall of 2010 (after the school year started): <input type="checkbox"/> Information provided to parents about kindergarten <input type="checkbox"/> Spring sign-up for kindergarten <input type="checkbox"/> Summer camp <input type="checkbox"/> Kindergarten teacher visited your home <input type="checkbox"/> Your child visited a kindergarten classroom <input type="checkbox"/> You were informed about which schools your child could attend <input type="checkbox"/> Other (please describe _____)

17	How old was your child when he/she started attending the <u>most recent</u> early education (pre-school) program?
18	Did your child attend a pre-school program <u>before the most recent one</u> in which he/she is enrolled? ___ Yes ___ No
19	If you answered 'Yes', how old was your child when he/she started the previous pre-school program?
20	What is the primary language spoken in your home?
21	If not English, is this language spoken by all caregivers and child? ___ Yes ___ No
22	If no, please explain the different languages spoken in your home by caregivers and children.
23	Indicate which best describes your household. ___ Three+ parent household ___ Two parent household ___ Single parent household ___ Child living with non-parent relative. Please explain: _____ ___ Child in foster care
24	How many people live in your household? ___ Number of adults (adult is someone over age 18) ___ Number of children
25	Please indicate which category best describes the <u>annual</u> income for your household: ___ less than \$20,000 ___ \$20,000-\$29,999 ___ \$30,000-\$49,000 ___ \$50,000-\$69,000 ___ \$70,000-\$100,000 ___ over \$100,000

26	<p>Do you or a household member receive any type of government assistance/funding (Social Security, TANF, Housing Allowance, VA benefits, Food Stamps, etc.)?</p> <p style="text-align: center;"><input type="checkbox"/> Yes <input type="checkbox"/> No</p>
27	<p>Who is the primary caregiver for your child? <u>Check one.</u></p> <p><input type="checkbox"/> Mother</p> <p><input type="checkbox"/> Father</p> <p><input type="checkbox"/> Stepmother</p> <p><input type="checkbox"/> Stepfather</p> <p><input type="checkbox"/> Adoptive mother</p> <p><input type="checkbox"/> Adoptive father</p> <p><input type="checkbox"/> Grandmother</p> <p><input type="checkbox"/> Grandfather</p> <p><input type="checkbox"/> Other relative (please explain) _____</p> <p><input type="checkbox"/> Foster mother</p> <p><input type="checkbox"/> Foster father</p> <p><input type="checkbox"/> Unrelated adult (please explain) _____</p>
28	How old is the primary caregiver?
29	Was primary caregiver born in the United States? <input type="checkbox"/> Yes <input type="checkbox"/> No
30	<p>What is the highest level of education attained by the child's <u>primary caregiver</u>?</p> <p><input type="checkbox"/> Did not complete high school</p> <p><input type="checkbox"/> High school diploma</p> <p><input type="checkbox"/> Some college or technical/vocational school</p> <p><input type="checkbox"/> Completed college</p> <p><input type="checkbox"/> Attended graduate school</p> <p><input type="checkbox"/> Completed a graduate degree (M.S., M.A., Ph.D., M.D., etc.)</p>

31	<p>Indicate the employment status of the child's primary caregiver:</p> <p><input type="checkbox"/> Employed full time</p> <p><input type="checkbox"/> Employed part time</p> <p><input type="checkbox"/> Not employed</p> <p><input type="checkbox"/> Full time student</p> <p><input type="checkbox"/> Part time student</p>
32	<p>Who is the secondary caregiver for your child? Check <u>one</u>.</p> <p><input type="checkbox"/> Mother</p> <p><input type="checkbox"/> Father</p> <p><input type="checkbox"/> Stepmother</p> <p><input type="checkbox"/> Stepfather</p> <p><input type="checkbox"/> Adoptive mother</p> <p><input type="checkbox"/> Adoptive father</p> <p><input type="checkbox"/> Grandmother</p> <p><input type="checkbox"/> Grandfather</p> <p>Other relative (please explain)</p> <p>_____</p> <p><input type="checkbox"/> Foster mother</p> <p><input type="checkbox"/> Foster father</p> <p><input type="checkbox"/> Unrelated adult (please explain)</p> <p>_____</p>
33	How old is the secondary caregiver?
34	Was secondary caregiver born in the United States? <input type="checkbox"/> Yes <input type="checkbox"/> No

35	<p>What is the highest level of education attained by the child's <u>secondary caregiver</u>?</p> <p><input type="checkbox"/> Did not complete high school</p> <p><input type="checkbox"/> High school diploma</p> <p><input type="checkbox"/> Some college or technical/vocational school</p> <p><input type="checkbox"/> Completed college</p> <p><input type="checkbox"/> Attended graduate school</p> <p><input type="checkbox"/> Completed a graduate degree (M.S., M.A., Ph.D., M.D., etc.)</p>
36	<p>Indicate the employment status of the child's secondary caregiver:</p> <p><input type="checkbox"/> Employed full time</p> <p><input type="checkbox"/> Employed part time</p> <p><input type="checkbox"/> Not employed</p> <p><input type="checkbox"/> Full time student</p> <p><input type="checkbox"/> Part time student</p>
37	<p>So that we will be able to contact you for follow-up if your current contact information changes, please list two persons who are likely to have contact information for you.</p> <p>1. _____</p> <p style="text-align: center;">Name Phone</p> <p>_____</p> <p style="text-align: center;">Address</p> <p>2. _____</p> <p style="text-align: center;">Name Phone</p> <p>_____</p> <p style="text-align: center;">Address</p>

Appendix D: SPARK Ready Kids Follow-up Teacher Questionnaire

**SPARK Ready Kids Follow-up
Teacher Questionnaire**

School ID number: _____ - _____

Teacher ID number: _____

Part A: Characteristics of Class and Children

1. How many hours per day does your class normally meet?
WRITE THE NUMBER TO THE NEAREST HALF HOUR,
FOR EXAMPLE, 2.5, 3.5.

_____ hrs/day

2. What type of kindergarten program is this class?
CIRCLE ONE

- | | |
|--|---|
| a. Regular kindergarten class 1-year program;
traditional year of school primarily for 5 year olds
prior to first grade..... | 1 |
| b. 1st year of a 2-year kindergarten program | 2 |
| c. 2nd year of a 2-year kindergarten program | 3 |
| d. Transitional (or readiness) kindergarten
(extra year of school for kindergarten-age
eligible children who are judged not ready
for kindergarten)..... | 4 |
| e. Transitional/pre-1st grade class (extra year
of school for children who have attended
kindergarten but have been judged not
ready for first grade)..... | 5 |
| f. Ungraded class with at least some
kindergarten-aged children (a classroom
containing kindergarten-aged students,
possibly in combination with other ages,
not formally identified as a "kindergarten"
class)..... | 6 |
| g. Multigrade class with at least some
kindergarten-aged children
(a classroom containing kindergarten
and some combination of other grades –
for example a combination prekindergarten/
kindergarten)..... | 7 |
-

3. As of today's date, how many children in your class belong to each of the following racial-ethnic groups? WRITE NUMBER ON LINE.

a. Asian or Pacific Islander.....	_____
b. Hispanic, regardless of race.....	_____
c. Black, not of Hispanic origin.....	_____
d. White, not of Hispanic origin.....	_____
e. American Indian or Native Alaskan.....	_____
f. Native Hawaiian.....	_____
g. Other (SPECIFY).....	_____
Total class enrollment	<u> </u> Total

4. For what percent of children in your classroom did you get records from their preschool or Head Start program or communicate with their preschool or Head Start teacher? CIRCLE ONE.

None.....	1
1 - 25%.....	2
26 - 50%.....	3
51 - 75%.....	4
76% or more.....	5

5. Do any of the children in your class speak a language other than English?

Yes.....	1
No.....	2

6. Which languages other than English are spoken by the children in your class? CIRCLE ALL THAT APPLY.

- | | |
|--|----|
| a. Spanish..... | 1 |
| b. German..... | 2 |
| c. French..... | 3 |
| d. Portuguese..... | 4 |
| e. Arabic..... | 5 |
| f. Vietnamese..... | 6 |
| g. Chinese..... | 7 |
| h. Japanese..... | 8 |
| i. Korean..... | 9 |
| j. A Filipino language..... | 10 |
| k. Haitian Creole..... | 11 |
| l. Hawaiian Creole/Pidgin English..... | 12 |
| m. Other language (SPECIFY): | 13 |

7. How many children with limited English proficiency (LEP) do you have in your class?

Number of LEP children..... _____

8. Which languages other than English do you speak?
CIRCLE ALL THAT APPLY.

- | | |
|--|----|
| a. No language other than English..... | 1 |
| b. Spanish..... | 2 |
| c. German..... | 3 |
| d. French..... | 4 |
| e. Portuguese..... | 5 |
| f. Arabic..... | 6 |
| g. Vietnamese..... | 7 |
| h. Chinese..... | 8 |
| i. Japanese..... | 9 |
| j. Korean..... | 10 |
| k. A Filipino language..... | 11 |
| l. Haitian Creole..... | 12 |
| m. Hawaiian Creole/Pidgin English..... | 13 |
| n. Other language (SPECIFY): | 14 |
-

Part B: Class Organization, Class Activities and Evaluation

9. Does your classroom have the following interest areas or centers for activities? CIRCLE ONE NUMBER ON EACH LINE.

	Yes	No
a. Reading area with books.....	1	2
b. Listening center.....	1	2
c. Writing center or area.....	1	2
d. Pocket chart or flannel board.....	1	2
e. Math area with manipulatives.....	1	2
f. Area for playing with puzzles and blocks (Legos, etc.).....	1	2
g. Water or sand table.....	1	2
h. Computer area.....	1	2
i. Science or nature area with manipulatives.....	1	2
j. Dramatic play area or corner.....	1	2
k. Art area.....	1	2

Part C: Your Background

10. What is your gender?

Male..... 1

Female..... 2

11. In what year were you born? 19 ____

12. Are you of Hispanic or Latino origin? CIRCLE ONE NUMBER.

Yes..... 1

No..... 2

13. Which best describes your race? CIRCLE ONE OR MORE.

American Indian or Alaska Native 1

Asian 2

Black or African American..... 3

Native Hawaiian or Other Pacific Islander..... 4

White 5

14. Counting this school year, have you taught the following grades and programs? CIRCLE ONE NUMBER ON EACH LINE.

	Yes	No
a. Preschool or Head Start.....	1	2
b. Kindergarten (including Transitional/Readiness Kindergarten and Transitional/pre-1st grade).....	1	2
c. First grade.....	1	2
d. Second through fifth grade	1	2
e. Sixth grade or higher	1	2
f. English as a Second Language (ESL) program.....	1	2
g. Bilingual education program.....	1	2
h. Special education program	1	2
i. Physical education program.....	1	2
j. Art or music program	1	2

15. Counting this school year, how many years have you taught in your current school including part-time teaching? WRITE THE NUMBER OF YEARS TO THE NEAREST HALF YEAR (FOR EXAMPLE, 2.5, 3.5).
 _____ Years

16. What is the highest level of education you have completed? CIRCLE ONLY ONE NUMBER.

High school diploma or GED.....	1
Associate's degree	2
Bachelor's.....	3
At least one year of course work beyond a Bachelor's but not a graduate degree...	4
Master's.....	5
Education specialist or professional diploma based on at least one year of course work past a Master's degree level.....	6
Doctorate.....	7
Other (PLEASE SPECIFY): _____ _____	8

17. Have you completed college courses in the following areas? CIRCLE ONE NUMBER ON EACH LINE.

	Yes	No
a. Early childhood education	1	2
b. Elementary education.....	1	2
c. Special education.....	1	2
d. English as a Second Language (ESL)	1	2
e. Child development	1	2
f. Methods of teaching reading.....	1	2
g. Methods of teaching mathematics.....	1	2
h. Methods of teaching science.....	1	2

18. What type of teaching certification do you have? CIRCLE ONLY ONE NUMBER.

None.....	1
Temporary, probational, provisional, or emergency certification.....	2
Certificate for completion of an alternative certification program.....	3
Regular certification but less than the highest available.....	4
The highest certification available (permanent or long term).....	5

19. In what areas are you certified? CIRCLE ONE NUMBER ON EACH LINE.

	Yes	No
a. Elementary education.....	1	2
b. Early childhood	1	2
c. Other (PLEASE SPECIFY): _____ _____	1	2

20. Date questionnaire completed: / /
MM DD YY

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