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Family Socioeconomic Status And Children's Reading Ability: The Buffering Effect Of Parental Social Support

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FAMILY SOCIOECONOMIC STATUS AND CHILDREN'S READING ABILITY: THE BUFFERING EFFECT OF PARENTAL SOCIAL SUPPORT

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DEDICATION

There are several people to whom I would like to dedicate this work. Given that this work highlights the importance of reading, I would be completely remiss if I did not dedicate this to my own parents who instilled in me a love for reading early on in my childhood. Their tremendous parenting afforded me the multitude of opportunities that led me to where I am today, something for which I am eternally grateful. I would also like to dedicate this to my wonderful, loving wife who continuously supported me in my academic endeavors despite the fact that they often prevented us from spending as much time together as we both would like. Additionally, I would like to dedicate this work to Dr. Ann Stacks and the rest of my committee who so graciously made themselves incredibly available to me throughout this entire process. Their combined expertise and support proved to be an invaluable asset in completing this milestone.

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CHAPTER 1

FAMILY SOCIOECONOMIC STATUS AND CHILDREN'S READING ABILITY: THE BUFFERING EFFECT OF PARENTAL SOCIAL SUPPORT

The Importance of Children's Early Reading

The impetus for the examination of children's early reading skills and social support within one theoretical framework comes from a need for nationwide improvement in overall academic achievement, and specifically, reading. Although teaching students to effectively read remains a major goal of education, many students have persistent difficulties in learning even basic reading skills. Previous research has indicated that at least one in five students has significant difficulties with reading acquisition (Lyon & Moats, 1997). The most recent data from the National Center for Education Statistics (NCES) illustrate the academic struggles of children in the United States, finding that of fourth grade children, only 33% performed at or above proficient reading levels, 39% at or above proficient math levels, and 34% at or above proficient science levels (Aud et al., 2011). Further, in comparison to other industrialized nations, the reading ability of fourth graders in the United States is relatively average, with 21 out of 45 examined jurisdictions (countries/provinces) having higher average reading scores (U. S. Department of Education, National Center for Education Statistics [NCES], 2008). From this data, it appears that children in our nation struggle rather mightily with attaining the necessary reading skills requisite for school success both within a national and international context.

Prior to delving deeper into the nuances of the reading literature, it is necessary to establish a clearer picture of reading and why it is perhaps the most critical factor in determining children's academic trajectories. Of the early learning skills that children must master in the first few years of school, reading is the most important because it is fundamental to overall school

success (Perfetti & Curtis, 1986). The proper development of reading-related skills is critical for academic success across the curriculum and early reading is crucial for the development of math skills (Glenberg, Willford, Gibson, Goldberg, & Zhu, 2012), general cognitive ability (Harlaar, Hayiou-Thomas, & Plomin, 2005), vocabulary development (Verhoeven, van Leeuwe, & Vermeer, 2011), and school achievement (Savolainen, Ahonen, Aro, Tolvanen, & Holopainen, 2008; Werner & Smith, 1992). Additionally, difficulties in learning to read can impact attitudes toward school and students' academic self-concept (Bear, Minke, & Manning, 2002; Chapman, Tunmer, & Prochnow, 2000) as well as students' engagement, motivation, and connection to the school (Guthrie & Wigfield, 2000; Klem & Connell, 2004; Snow, Burns, & Griffin, 1998). Failure to achieve grade-level expectations in reading is the primary reason for students in the early grades to be retained (Snow et al., 1998). The most recent meta-analysis on grade retention found negative effects in terms of students' academic, socioemotional, and behavioral outcomes when retained students were compared to similar students promoted on to the next grade (Jimerson, 2001). As it pertains to long-term academic trajectories, children with reading difficulties are less likely to have higher grades, especially in academic subjects (Spreen, 1987) and to successfully finish secondary education (Levine & Nourse, 1998; Maughan, 1995; Spreen, 1987; for a recent synthesis of the literature, see Reschly, 2010). Further, grade retention is highly associated with high school dropout (Jimerson, Anderson, & Whipple, 2002) and Rumberger (1995) suggested that grade retention was the most powerful predictor of dropout, with retained students being 11 times more likely to drop out of school. Clearly, the importance of developing age-appropriate reading skills cannot be overstated.

Research indicates that the attainment of age-appropriate reading skills appears to be contingent on a number of distinct but interrelated skills including phonological awareness, print

knowledge, oral language skills, and reading fluency (Fuchs, Fuchs, Hosp, & Jenkins, 2001; Whitehurst & Lonigan, 1998). Together, these skills represent the core components of every successful reader's skillset. While these skills are necessary for reading, on their own they are insufficient predictors of reading ability (Bus & van IJzendoorn, 1999; Sénéchal & LeFevre, 2002; Storch & Whitehurst, 2002). Each skill and empirical evidence for its relationship to the development of reading is described below.

Phonological awareness refers to a child's awareness of and access to the phonology (sounds) of their language (Burgess, 2002). Phonological awareness requires the ability to detect and manipulate the sound structure of spoken language independent of meaning. This ability to detect small units of sound within spoken words helps children make connections between the sounds and the letters from the alphabetic code that represent them in print (Lonigan, Anthony, Phillips, Purpura, Wilson, & McQueen, 2009). Children learn to read more quickly when they are proficient at detecting and manipulating syllables, rhymes, or phonemes (e.g. Lonigan, Burgess, & Anthony, 2000; Wagner, Torgeson, Rashotte, & Hecht, 1997). Phonological awareness is perhaps the most powerful predictor of early reading ability and a deficit in this reading-related skill is thought to be the primary cause of difficulties in learning to read (Adams, 1990; Bryant, Maclean, Bradley, & Crossland, 1990; Wagner, Torgeson, & Rashotte, 1994). Further, differences in phonological processing abilities are highly stable in kindergarten (e.g. Wagner et al., 1994,1997) or earlier in preschool (Lonigan et al., 2000). For instance, Wagner et al. (1997) reported that their year-to-year stability coefficients for their latent phonological awareness variable ranged from .83 (kindergarten to first grade) to .95 (second grade to third grade and third grade to fourth grade). Similarly, Lonigan et al. (2000) found that a latent variable representing phonological awareness in children 4-5 years of age perfectly predicted a

latent variable indexing phonological awareness one year later. This stability of phonological awareness over time suggests that early childhood is a critical time for the development of children's phonological processing skills.

Phonological processing is a critical component of early reading acquisition, however, to learn to read, a child must understand more than the phonological structure of language. Writing systems have specific conventions that dictate the manner in which we visually assimilate text and pictures on a page while reading. For example, the English language has 26 letters that are used to combine words, but there are specific constraints on how these letters can be combined. There must be at least one vowel, and words normally contain both vowels and consonants (with the obvious exception of single letter words like *I* and *a*). Additionally, there are orientation and spacing constraints in printed language. Reading in the English language is performed from left-to-right and top-to-bottom and spaces are contained in between words, not within words. In order for children to be successful readers, they must first acquire a considerable amount of knowledge regarding the visual aspects of the written language they are learning in. These skills are encompassed by the term *print knowledge*. There is a substantial amount of literature suggesting that a relation between print knowledge and early reading ability exists and this relationship aids in the process of learning to read (e.g. Clay, 1985; Tunmer, Herriman, & Nesdale, 1988) and even after accounting for variance due to phonological awareness, memory, nonverbal IQ, and age (e.g. Cunningham, Perry, & Stanovich, 2001; Cunningham & Stanovich, 1990; Levy, Gong, Hessels, Evans, & Jared, 2006).

In addition to the importance of accurately decoding written language, children's *oral language* skills are critical to early reading acquisition. The language basis of reading has been clearly established, with oral language skills predictive of at least some of the variability in

performance on measures of literacy acquisition (Griffin, Hemphill, Camp, & Wolf, 2004; Hulme & Snowling, 2005; Speece, Roth, Cooper, & de la Paz, 1999; Spira, Bracken, & Fischel, 2005; Whitehurst & Lonigan, 1998). Further, substantial longitudinal evidence exists suggesting that native English-speaking children who have developed higher levels of oral language proficiency by kindergarten are more successful in learning to read during the primary grades when compared to peers with underdeveloped oral language skills at school entry (e.g. Catts; Adlof, & Weismer, 2006; Dickinson & Tabors, 2001; Sénéchal & LeFevre, 2002; Storch & Whitehurst, 2002). Additionally, several studies have demonstrated a consistent longitudinal relation between the extent to which oral language predicts later reading proficiency in typically developing, reading-delayed, and language-delayed children (e.g. Bishop & Adams, 1990; Butler, Marsh, Sheppard, & Sheppard, 1985; Pikulski & Tobin, 1989; Scarborough, 1989; Skibbe, Grimm, Stanton-Chapman, Justice, Pence, & Bowles, 2008). These studies highlight the detrimental effect that poorly developed oral language skills can have on early reading acquisition. With respect to the timing of intervention, the evidence is clear that intervening prior to formal schooling is the best strategy in order to help ameliorate the negative effects of underdeveloped oral language skills on children's reading outcomes (e.g. Fielding-Barnsley & Purdie, 2003; Ramey & Ramey, 2004; Reese, Sparks, & Leyva, 2009)

Reading fluency refers to the speed with which text is reproduced into spoken language (Fuchs et al., 2001) and efficiency in this skill is thought to free up capacity for higher level, integration processing of text, thus leading to overall increased reading competence (e.g. Klauda & Guthrie, 2008; Speece & Ritchey, 2005). This skillset develops in early childhood and sets children on a developmental course for gains in reading ability which is why children have relatively consistent experiences of either accomplishment or difficulty in reading from the

outset of schooling (Pressley, 1988; Spear-Swerling, & Sternberg, 1996). Stevenson and Newman (1986) illustrated this relative consistency when they found that the number of letters known at kindergarten entry was highly correlated with later high school reading achievement. Additionally, findings by Juel (1988) indicate that children not reading well by the end of first grade have a 90% chance of remaining poor readers. More recently, Parrilla, Kirby, & McQuarrie (2004) found similar longitudinal estimates of consistency from first grade thru fifth grade. Evidence from these studies investigating the consistency of reading development over time emphasizes the importance of finding novel ways in which to address reading difficulties early in children's development.

Factors That Influence Reading Development

When examining the potential reasons behind the reading-related discrepancies among children and the potential long-term consequences of these reading gaps, one must consider the role that the home literacy environment (HLE) plays in the development of children's reading-related skills. The HLE includes the experiences, attitudes, and materials related to literacy that a child experiences and interacts with at home (Lonigan & Whitehurst, 1998; Roberts, Jurgens, & Burchinal, 2005), as it is the primary learning environment for children prior to formal schooling. Research indicates that the experiences and interactions a child is exposed to within the HLE are greatly impacted by a family's socioeconomic status.

Poverty, The HLE, and Children's Reading

Arguably the most important contextual factor in determining a child's opportunity for school success is their family's socioeconomic status (SES). Research suggests that children from low-income families do not perform as well academically as those who come from more advantaged backgrounds (e.g. Battle, 2002; Bradley & Corwyn, 2002; Caldwell & Ginther,

1996; Duncan, Yeung, Brooks-Gunn, & Smith, 1998; McLoyd, 1998; Smith, Brooks-Gunn, & Klebanov, 1997; Stipek & Ryan, 1997; Vail, 2004). Further, community-level, higher district poverty and higher school minority composition is predictive of higher reported rates of reading difficulty in kindergarten (Rimm-Kauffman, Pianta, & Cox, 2000). The timing of poverty is especially critical; research by Duncan et al. (1998) indicates that family economic conditions in early childhood have the greatest impact on academic achievement, especially among children in families with low income. SES is highly associated with school readiness from a very early age, with lower risk being associated with higher developmental test scores as early as in the first year of life (Klebanov, Brooks-Gunn, McCarton, & McCormick, 1998).

In the 1980's and 1990's researchers uncovered the importance of early reading-related skills and the detrimental effect that underdeveloped skills have on later academic achievement. For example, early delays in reading-related skills are associated with substantial gaps in test achievement, beyond reading throughout the duration of schooling. Research by Stanovich (1986) found that math and vocabulary gaps widened over time, suggesting that not only are children from low SES backgrounds more likely to demonstrate significant gaps in school performance at school entry, but these gaps are likely to widen over time and 'leak' into other academic areas as well. Given the amount of overlap between math problem solving and reading decoding it follows that delayed reading would impact other academic areas such as math and in turn, overall academic performance. Following that work, Phillips, Crouse, and Ralph (1998) estimated that approximately half of the test achievement gap seen at the end of high school can be attributed to test achievement gaps at school entry. As a result of these findings, in the late 1990's and early 2000's researchers turned their attention to systematically examining the developmental trajectories of children growing up in poverty. Two decades after Stanovich

published his findings, the National Institute of Child Health and Development Early Child Care Research Network (NICHD ECCRN) corroborated these findings, reporting that at age two, children in the lowest income group (persistently poor; below 200% of the poverty threshold) start out 1 *SD* below the mean in cognitive and language skills and remain in the lowest rank throughout schooling until at least age 8.5 (Early Child Care Research Network, 2005). Further, these findings emerged while controlling for pertinent family characteristics such as parent education, parenting sensitivity, and child-care arrangements.

It is critical to address these early gaps and promote early literacy in low income children, especially when one considers that the rate of children living in poverty is increasing. Recent census data reported by Kids Count (2010) suggests that 1 out of every 4 children under the age of 5 are living in poverty (within 150% of federal poverty guidelines). This percentage of children living in poverty is greater than children of school age (20%). These numbers are up from 19% of children under the age of 5 living in poverty and 16% of school-age children living in poverty in the year 2000. If the increase previously seen from 2000 to 2010 is seen in the next decade, nearly 1 out of every 3 children under the age of 5 will be living in poverty by 2020. These statistics point to the vulnerability of low-income children and families and highlight the notion that low-income parents and their children face a confluence of environmental challenges that put them at a distinct disadvantage. These alarming rates necessitate a need for research to examine and identify processes that may help to buffer low-income families from the negative effects of poverty on children's reading abilities.

The Importance of Teacher Quality

It has long been recognized that high quality early childhood education has the potential to support the skillset that is the foundation of early reading (e.g. The Carolina Abecedarian

Project, Ramey et al., 2000; The Chicago Child-Parent Center and Expansion Program, Reynolds, Temple, Robertson, & Mann, 2002; The Perry Preschool Project, Schweinhart, 2000). Perhaps even more important than just supporting the development of children's reading related skills, high quality early childhood education can substantially reduce the cumulative developmental toll that is measured reliably in high-risk samples of young children. Importantly, these programs are efficacious in improving school readiness and subsequent academic achievement in reading (Ramey & Ramey, 2004). However, quality early childhood programs require high quality teachers. Teacher quality has always been an important consideration in education and its importance is reflected in the adoption of national standards for public education as expressed in the federal No Child Left Behind Act of 2001 (NCLB; U.S. Congress, 2001). NCLB calls for highly qualified teachers in every classroom in order to promote educational equity for all students alike. Teachers are one of the most important factors that explain variation in children's test scores and are preceded only by individual and family background characteristics (Goldhaber & Brewer, 1997). Teacher quality is of particular importance for children from low-income families as these students have traditionally received their education from the least qualified, least experienced teachers, which places them at an increased risk for low academic achievement (Hanushek, Kain, & Rivkin, 2004; Ingersoll, 2002; Lankford, Loeb, & Wyckoff, 2002). The critical nature of teacher quality in determining children's school achievement has necessitated a great deal of research in this area. Traditionally, studies measuring the impact of teacher quality have focused on the following areas of teaching quality as articulated by NCLB: teacher certification, teacher competency, teacher education, and teacher experience. A recent study by Phillips (2010) investigated the relationship between these key teacher quality indicators and specific reading achievement

outcomes for children in elementary school, finding that teachers' level of education (i.e. whether the teacher had earned a graduate degree in elementary education) was the only indicator that significantly influenced student outcomes. Additionally, this finding was of particular importance for at-risk children when compared to their non-risk peers, highlighting the importance of this finding for children most vulnerable to the development of reading difficulties. This finding echoes previous research linking higher levels of teacher education to higher global quality in early childhood center-based care (Burchinal, Cryer, Clifford, & Howes, 2002; de Kruif, McWilliam, Ridley, & Wakely, 2000; Early Child Care Research Network, 2005). Additionally, teachers with more education have been found to hold stronger developmentally appropriate beliefs about teaching young children (McMullen, 1997; McMullen & Alat, 2002; Snider & Fu, 1990) and these beliefs are related to observed classroom practices (Cassidy, Buell, Pugh-Hoese, & Russell, 1995; Vartuli, 1999). Despite the known positive effects of highly educated teachers on child outcomes and overall classroom quality, especially as it pertains to early childhood, according to the most recent data on the state of preschool published by Barnett, Carolan, Fitzgerald, and Squires (2011), most children enrolled in pre-K today attend programs where teachers are not required to have a bachelor's degree and assistants must have only high school diplomas. Additionally, the compensation for early childcare educators remains alarmingly low. For example, Herzenberg, Price, and Bradley (2005) report that in the years 2002 through 2004, teachers and administrators working in early childhood education made about 10 dollars per hour, roughly half as much as the average earnings of a female college graduate. These findings highlight a critical problem in early education in our country; despite a plethora of research demonstrating that the skills necessary for successful

reading develops before children enter formal schooling, the pay and education requirements for early childhood educators remains low.

Intervention Programs Targeting Income-Based Reading Differences

Because of the importance of reading in determining overall academic performance and school outcomes, it has become the focal point of many intervention programs. Traditionally, antipoverty programs (programs that offer wage supplements sufficient to raise family income above federal poverty threshold, as well as subsidies for child and adult health insurance) have been the primary intervention strategy for reducing income-based discrepancies in children's health and development outcomes as well as family stress related to poverty, which in turn should theoretically ameliorate the effect of these factors on children's development including reading skills. Despite controversy throughout the years about whether income support alone is a useful intervention strategy, recent research by Duncan, Morris, & Rodrigues (2011) indicates that antipoverty programs can be effective intervention strategies. The authors estimate that a $1000 increase in annual income increases young children's achievement by 5%-6% of a standard deviation. As a result, the authors contend that increasing family income alone has a policy-relevant, positive impact on the eventual achievement of preschool children. Increasing money coming into the household through welfare or other social programs may be an effective intervention strategy; however, given the current economic climate, including lifetime limits on cash assistance, it may not be fiscally possible in the near future to continue to offer these programs.

In addition to antipoverty programs, many other government-subsidized school-based and home-based programs (e.g. Head Start, Early Head Start, Even Start, etc.) are available to families to improve school readiness outcomes for at-risk children. A critical component of

these programs is the timing of the intervention; the earlier intervention programs start and the longer they continue, the more successful they are likely to be (Ramey & Ramey, 1992). Another key feature of these programs is their "two-generation approach", which aims to support both parents and children as they try to improve their futures. These programs enable parents to take advantage of community resources in furthering their own educations, getting job training and finding work, or strengthening family relationships and functioning through establishing supportive social relationships within the community (Ramey, Ramey, Gaines, & Blair, 1995). Head Start is a preventive program initially funded in 1965 that provides disadvantaged young children with preschool experience, social services, and medical and nutritional assistance. The Head Start Impact Study (HSIS) is a nationally representative study of three-and-four year-old children eligible for Head Start services randomly assigned to either a treatment group enrolled in Head Start or a control group that did not enroll in Head Start (control parents were not precluded from seeking out other available services (i.e. parents found other available services for their child or the child was cared for at the home)). The HSIS is designed with a focus on impacts, the difference between the outcome observed for Head Start participants and what would have been observed for these same individuals had they not participated in Head Start. Findings reported by the U.S. Department of Health and Human Services, Administration for Children and Families (2005) indicate that Head Start has significant, large, positive impacts on children's cognitive development related to pre-reading skills and parent reports of child emergent literacy skills.

Early Head Start (EHS), a comprehensive program that focuses on enhancing children's development while strengthening families, began in 1995 and is designed to serve low-income pregnant women and families with infants and toddlers up to the age of 3. Research utilizing the

National Early Head Start Research and Evaluation (EHSRE) Project, a federally funded and nationally representative study similar in design to HSIS, indicates that children participating in EHS perform better than do control children in cognitive and language development. Additionally, compared to controls, EHS parents are more emotionally supportive, provide more language and learning stimulation, and read to their child more often (Love et al., 2005).

The Even Start program was authorized by Congress in 1988 to provide early childhood, adult, and parenting education to participating families to improve family literacy outcomes and was initially documented as being effective in improving both parent and child literacy outcomes (St. Pierre, 1995). However, more recent findings suggest that Even Start may not be nearly as effective as it was initially thought to be. St. Pierre et al. (2003) found that while Even Start parents and children do make gains in literacy, these gains are not greater than those made by control parents, and parents and children still score low on national norms when exiting the program. Additionally, the authors found that families did not take full advantage of the services available to them and consequently, the extent to which parents and children participated in the program was related to child outcomes.

Despite the efficacy of these federally funded, two-generation intervention programs and the strict federal regulations that govern them, there still is room for growth and improvement. Programs such as HS serve only a limited percentage of the eligible population. According to Haskins & Barnett (2010), of the children in the bottom income quintile, Head Start serves only about 30% of eligible children at age 4 and 20% of children at age 3. Furthermore, programs designed to intervene prior to the preschool years such as Early Head Start only serve 4% of all eligible families with infants and toddlers (Schmit, 2011). Because of the limited number of funded slots in these federal programs, unfortunately, there are many lower-quality school

readiness options that many parents are essentially forced into taking. As a result, families that are unable to participate in programs such as HS are likely to be at a greater need for resources that could be provided by enhanced social support. For this reason, other avenues of research need to be explored, specifically options should be explored that utilize and capitalize on already existent resources by making them more readily available to those individuals in need. One key process that has been studied extensively as a protective factor for individuals in high-stress situations is social support.

Social Support

Social support is an extensively studied phenomenon that has been shown to be a protective factor for individuals in a myriad of high-risk or novel situations (e.g. health studies examining the effects of stress, gerontology studies examining the protective effects of social support on successful aging, etc.). There have been a multitude of theories and conceptualizations of social support over the years. The first in-depth investigation of social support as a multi-dimensional construct consisted of a tripartite theory of social support. Caplan (1974) proposed that social support process could be described as either emotional support, cognitive support, or materials support. Emotional support refers to behavior that fosters feelings of comfort and leads an individual to believe he or she is admired, respected, and loved, and that others are available to provide caring and security. Cognitive support refers to information, knowledge, and/or advice that helps the individual to understand his or her world and to adjust to changes within it. Materials support refers to goods and services that help to solve the practical problems faced the by individual.

Most conceptualizations of social support are a derivative of this initial model. Shortly after Caplan (1974) introduced his model, House (1981) outlined a four-factor model of social

support that included emotional support (as defined by Caplan (1974), informational support (what Caplan (1974) referred to as cognitive support), instrumental support (what Caplan (1974) referred to as materials support), and appraisal support. Appraisal support refers to evaluative feedback and affirmations that let the individual know that they are doing a good job. Whereas the previous three types of support are primarily involved in problem-solving, appraisal support is most valuable for self-evaluation (House, 1981). House (1981) suggested that emotional support is the most important category when it comes to the perception of support and how this is conveyed to others. Research conducted prior to House's (1981) conceptualization of social support by Gottlieb (1978) corroborated this assertion finding that when individuals were asked to list all types of supportive acts, emotionally supportive acts far outnumbered any other type of supportive act.

Barrera (1986) suggested that social support concepts and their operationalizations could be organized into three broad categories: social embeddedness, perceived social support, and enacted support. Social embeddedness encompasses the connections that individuals have with others in their social environments. Perceived social support is the cognitive appraisal of being reliably connected to others. Many measures of social support tap into the perceived availability and adequacy of supportive ties. This type of support differs from social embeddedness as the number of supporters and frequency of contact is not quantified or necessarily of importance. Instead, measures attempt to quantify the amount of confidence that an individual has in their social environment being supportive if it was needed. Enacted support refers to actions that others perform when they render assistance to the focal person. Despite the heterogeneity among these three categories of social support concepts, there are meaningful connections between them. As indicated by Heller and Swindle's (1983) model of social support and coping, the

availability of social connections contributes to a person's perception of the reliability in which they can depend on others for aid or emotional assistance. In turn, the perceived availability of support is related to an individual's decision to attempt to seek out support and ultimately to the provision of support by those individuals who are capable and equipped to provide meaningful assistance. More recently, Thoits (2011) argued that there were two broad types of support that acted as mechanisms through which social relationships can improve physical health and psychological well-being, both directly and indirectly by buffering stress; these two types are emotional sustenance and active coping assistance. Additionally, it was suggested that these two types of support are transacted through two broad categories of supporters, significant others and experientially similar others who specialize in supplying different types of support to distressed individuals.

Although there is a fair amount of variability across theoretical conceptualizations of the dimensions of social support, as a construct it can be loosely defined as the social resources that persons perceive to be available or that are actually provided to them by nonprofessionals in the context of both formal support groups and informal helping relationships (Cohen, Gottlieb, & Underwood, 2000). Interestingly, perceptions of social support availability have been shown to be better predictors of adjustment to stressful events than actual received support (Stroebe & Stroebe, 1996; Kobasa & Puccetti, 1983). It is unclear, however, how these protective effects occur and why actual receipt of support is often linked with increased distress. One explanation for this phenomenon is that people's attempts to provide support are often miscarried, for example being well-intentioned, but delivered clumsily or with poor timing (Folkman & Lazarus, 1985; Rook, 1984; Steinberg & Gottlieb, 1994). Another potential reason is that receiving help

may negatively impact recipient's self-esteem as the difficulties they are struggling to overcome become more salient (Fisher, Nadler, & Whitcher-Alagna, 1982).

Because of these findings, it has been suggested that the perception that one could get support if it was needed is sufficient enough (Wethington & Kessler, 1986). In fact, recent research suggests that for received support to be optimally beneficial, it must be invisible to the recipient (Bolger, Zuckerman, & Kessler, 2000; Bolger & Amarel, 2007). The question then becomes a matter of whether this condition holds true for all individuals, irrespective of amount of stress. It appears that this condition does not hold true for all individuals; it may be true for people with low levels of need but not for those who need help the most. Social support has been found to protect individuals from the pathogenic effects of high levels of stress but be relatively unimportant for those with low levels of stress (Cohen & Hoberman, 1983) and to reduce the effect of risk factors and increase the effect of protective factors (Wills & Cleary, 1996). These findings provide evidence for a buffering hypothesis of social support.

The Buffering Effect of Social Support

A buffering hypothesis of social support suggests that social support, perceived or actually received, is of most importance to those who need it most, including families living in poverty. Poor parents are more likely to have more frequent and chronic sources of stress (e.g. unable to pay bills, poor/no medical care, substandard housing, neighborhood safety problems, risk of criminal victimization, etc.) in their life and additionally, are unable to take advantage of certain things that more affluent parents might do to alleviate or avoid stressful situations (e.g. hire high-quality childcare services, live in safer neighborhoods, etc.). Research by Hashima and Amato (1994) demonstrated the buffering effect of social support for low-income families, finding that the negative effects of poverty were only apparent for those with low levels of social

support. However, important to note from this study is that the interaction between income and social support was strongest for perceived social support. When it came to actual reported amounts of received support, there was a negative correlation between received social support and unsupportive parenting behaviors, irrespective of income level. This suggests that received social support may be beneficial for all parents living in any type of economic environment. From this study, it appears that perceived social support has a very specific buffering effect depending on economic background (benefits low-income families the most), whereas received social support seems to be generally beneficial for all parents regardless of socioeconomic status. More specifically, all parents can benefit from someone providing some sort of supportive behavior (e.g. helping to take care of a child), however, believing that one can rely on others in a time of need or crisis is especially important for poor parents where the potential for these types of situations is much greater and much more salient on an everyday basis. Within the lens of low-income parents attempting to provide adequate experiences for the proper development of their child's reading skills, it is evident that there is a great deal of stress and certain processes such as a socially supportive network may help to buffer them from the effects of a high-stress environment.

More specifically, it is proposed that a socially supportive network can act in a way to protect families from the deleterious effect of daily stressors and the manner in which this stress affects the family context and the learning opportunities that are afforded to high-risk children. There is a developing body of literature linking parental social support to overall parenting quality, especially for families living in high-risk environments (Franco, Pottick, & Huang, 2010; Woody & Woody, 2007). Additionally, existing research with high-risk samples points to significant parenting and home environment influences on children's developmental

competencies related to reading ability. Positive parenting is related to the quality of parent-child shared reading interactions (Dexter & Stacks, In Press; Landry, Smith, Swank, Zucker, Crawford, & Solari, 2012) and the quality of this interaction is the most commonly used measure and conceptualization of the quality of the home literacy environment (Burgess, Hecht, & Lonigan, 2002) which is predictive of children's literacy outcomes (Bus, van iJzendoorn, & Pellegrini, 1995; Scarborough & Dodrich, 1994; Trivette, Dunst, & Gorman, 2010).

In terms of specific positive parenting strategies, Merlo, Bowman, and Barnett (2007) identified a specific parenting mechanism, parental nurturance, that was uniquely predictive of children's reading ability three and a half years later even after controlling for prior reading ability, phonological awareness, verbal reasoning ability, and home academic stimulation in a sample of children from low-income families. This finding is a promising one in terms of identifying specific interventions strategies; however, it is important to recognize that a reduction in parental nurturance unfortunately often goes hand in hand with poverty. In fact, in perhaps the most oft-cited paper investigating the link between socioeconomic disadvantage and child development, Vonnie McLoyd (1998) suggests that the relationship is at least partially mediated by harsh, inconsistent parenting. A driving force behind this relationship is the impact that persistent poverty has on the parent-child relationship and the context of the home environment in general. Low income levels tend to be persistent, and the length of time spent living under economically stressed conditions decreases the quality of the home environment (Votruba-Drzal, 2003), which in turn influences children's academic outcomes. Recent research by Li, Robinson, Malacova, Jacoby, Foster, & van Eekelan (2013) indicates that maternal life stress events in pregnancy are related to children's literacy outcomes and school achievement at 10 years of age. This finding remained after controlling for sociodemographic factors known to be related to

child outcomes and demonstrates the negative effect that stress can have on children's developmental competencies related to literacy and school achievement. Moreover, these studies call attention to the critical nature of addressing the impact that living in a high-risk context can have on parenting and the quality of the home environment, two processes that are paramount to the development of children's reading-related skills.

Specific Aims

The overarching goal of this research is to investigate the role that parental social support plays in the development of children's reading ability. Due to the critical nature of early schooling in determining long-term academic success, analyses will focus on the impact of contextual factors on both short and long-term growth in reading skills from kindergarten moving forward. Additionally, given the importance of SES and teacher quality in predicting academic success, in order to examine the role of social support across all social strata and variations of teacher quality it is necessary to examine these questions in a large-scale, nationally representative sample of children in elementary school. Specifically, the study aims to determine the relationships among family SES, social support and reading ability from kindergarten entry through the end of 8th grade controlling for teacher quality. Before analyzing the buffering effect of social support, a series of analyses will be done to confirm relationships previously established in the literature, including the relationships between SES and reading ability, the protective effect of teacher quality on reading among children from low SES backgrounds, and the relationship between social support and SES. Research questions and hypotheses for the study are detailed below. :

(1) As children enter kindergarten, does their reading ability differ by their family SES?

- It is hypothesized that children's reading ability will significantly differ by their family SES. Children of families in the upper quintiles of SES are expected to have higher reading ability when compared to children of families in the middle quintile of SES. Children in families in the lower quintiles of SES are expected to have lower reading ability when compared to children of families in the middle quintile of SES. Children in families in the lower quintiles of SES are expected to have even lower levels of reading ability when compared to children of families in the upper quintiles of SES.

(2) Does teacher quality moderate the relationship between family SES and the gains children make in their reading ability across the kindergarten year?

- It is hypothesized that teacher quality will moderate the relationship between family SES and reading gains from across the kindergarten year. Specifically, it is hypothesized that children from low-SES families will make the greatest gains, but only if they are in classrooms with high-quality teachers.

(3) As children are finishing third grade, does the availability of parental social support differ by SES?

- It is hypothesized that parents in the upper quintile of SES will perceive the highest levels of social support, followed by those in the middle and lower quintiles. It is further hypothesized that parents in the lowest quintile of SES will report the lowest levels of social support.

(4) As children finish third grade, does the perceived availability of parental social support moderate the relationship between SES and children's reading ability?

- It is hypothesized that parental perceptions of social support will moderate the relationship between SES and children's reading ability. Specifically, it is hypothesized that the reading ability of children from low SES families will be higher for those whose parents have high social support when compared to those whose parents have low social support. This finding will be in support of the "buffering effect of social support"; that is, low SES parents can buffer their children from the detrimental effects of low SES on reading ability by having a supportive social network.

(5) Does reading ability over time vary by SES from the beginning of kindergarten through the end of eighth grade? Does teacher quality moderate this relationship?

- It is hypothesized that reading ability over time will vary by SES. Specifically, at the main effect level, it is hypothesized that children of higher SES families will experience greater gains in reading ability than their low SES peers. However, it is hypothesized that an interactive effect will occur where children from low-SES families placed in classrooms with high-quality teachers will demonstrate the largest gains. Additionally, it is hypothesized that the SES-based gaps in reading ability seen at the end of eighth grade will be larger than the SES-based gaps seen at kindergarten entry(tested in aim #1). Support for this finding would fall in line with previous research indicating that not only is there a significant income-based school performance gap early on in schooling, but that this gap is likely to widen over time (Matthew Effect; Stanovich, 1986).

(6) Do gains in reading ability over time from school entry to the end of middle school vary by the availability of parental social support when children are in elementary school?

- It is hypothesized that gains in reading ability over time, kindergarten through the end of eighth grade, will significantly differ by parental social support at the end of third grade. Specifically, it is hypothesized that children of parents with high social support will demonstrate larger gains in reading ability than their peers of parents with low social support.

(7) Does the availability of parental social support during the elementary school years moderate the relationship between SES and children's reading performance from school entry to the end of middle school?

- It is hypothesized that the availability of parental social support will moderate the relationship between SES and children's reading ability from kindergarten thru eighth grade. Specifically, it is hypothesized that the growth in reading ability of children from low SES families will be higher for those whose parents have high social support when compared to those whose parents have low social support. This finding will be in support of the "buffering effect of social support" from a longitudinal perspective; that is, low SES parents can buffer their children from the detrimental effects of low SES on reading performance over time by having a supportive social network early in children's development.

(8) Can SES and social support be used to predict class membership of types of gains/losses in reading ability over time?

- It is hypothesized that depending on group membership of SES and social support, children will be classified into different typologies of reading performance trajectories over time. Specifically, it is hypothesized that children will be classified into one of three groups: (1) no gains over time, (2) consistent

increase over time, and (3) consistent decrease over time. It is hypothesized that children whose parents have low SES but high social support will be classified into the "consistent increase over time" group, corresponding with the theory of a buffering effect of social support.

CHAPTER 2

METHOD

Participants

This study utilized a sample taken from the public-use version of the Early Childhood Longitudinal Study-Kindergarten Cohort (ECLS-K), a large-scale, nationally representative sample of children attending kindergarten in the United States in the fall of the 1998-1999 academic year and their families, teachers, and schools. At the beginning of the kindergarten year, the National Center for Education Statistics (NCES) used a multistage probability sample design in which they first selected geographic areas (counties or groups of counties), then selected public and private schools within these areas, and finally sampled children within the school (Tourangeau, Nord, Lê, Pollack, & Atkins-Burnett, 2006). The ECLS-K is a longitudinal study that focuses on the early school experiences of advantaged and disadvantaged children (including immigrant children), beginning with kindergarten and following children through 8th grade. The most current version of the public-use dataset is available for children in kindergarten through the eighth grade years. The ECLS-K collected child data via indirect and direct assessment (e.g. developmental status in: cognitive, socioemotional, physical, and psychomotor domains), parent data via interview by telephone (e.g. parent and child demographics, child and family health, family characteristics, and parent-child interactions), self-administered questionnaire data from school administrators (e.g. school demographics, school climate, school programs, and educational goals and objectives), and teachers' background information including age, educational attainment, etc., and student records.

The ECLS-K selected a nationally representative sample of 21,260 kindergartners attending more than 1,200 public and private schools throughout the nation. The sampled

children (51% male, 49% female) were from different racial-ethnic (58% White, 16% Black, 19% Hispanic, 3% Asian) and socioeconomic backgrounds, and included an oversampling of Asian and Pacific Islanders (APIs). Base-year data were collected when the children were in kindergarten in the fall of 1998 and the spring of 1999 (rounds 1 and 2). Follow-up data collections occurred in the fall of 1999 and spring of 2000 when children were in the first grade (rounds 3 and 4), in the spring of 2002 when children were in the third grade (round 5), in the spring of 2004 when children were in the fifth grade (round 6), and in the Spring of 2007 where children were in the eighth grade (round 7). The data that was used in this study were collected by direct child assessments as well as by parent computer-assisted interviews, and teacher questionnaires.

Measures and Procedures

Reading Achievement. Children's reading ability was assessed via direct child assessment. Test specifications were based on the 1992 and 1994 National Assessment of Educational Progress framework. The National Assessment of Educational Progress framework was developed to begin at fourth grade; consequently, the framework focuses on skills that are just emerging in early readers. For this reason, early elementary school educators and literacy curriculum specialists helped modify the assessment to be suitable for kindergarten and first grade. Pools of items for the reading assessment were borrowed or adapted, with permission, from published tests, including the Peabody Individual Achievement Test–Revised (Markwardt, 1989), the Peabody Picture Vocabulary Test–Revised (Dunn & Dunn, 1981), the Primary Test of Cognitive Skills (Huttenlocher & Levine, 1990), the Test of Early Reading Ability (Reid, Hresko, & Hammill, 1981), and the Woodcock-Johnson Tests of Achievement–Revised (Woodcock, Johnson, & Mather, 1989). Reading assessments contained multiple-choice or open-ended

questions to measure reading skills of varying proficiency levels. The longitudinal (from kindergarten thru eighth grade) reading assessment contained ten proficiency levels. These 10 levels reflected a progression of skills and knowledge; if a child had mastered one of the higher levels, he or she was very likely to have mastered the items that comprised the earlier levels as well. The 10 levels were: (1) identifying upper and lower-case letters of the alphabet by name, (2) associating letters with sounds at the beginning of words, (3) associating letters with sounds at the end of words, (4) recognizing common words by sight, (5) reading words in context, (6) making inferences using cues in the text, (7) extrapolation from clues in text and background knowledge, (8) evaluating text by demonstrating understanding of the author's craft, (9) evaluating nonfiction by comparing and contrasting, and understanding the effect of features of expository and biographical texts, and (10) evaluating complex syntax and understanding high-level nuanced vocabulary in biographical text. The test items on which the proficiency levels were defined were not used in all rounds of data collection, but only in grades for which their difficulty was appropriate. Level 1–3 items appeared only in the K-1 assessments; level 4 in K-1 and third grades; level 5 in all rounds; levels 6–7 in third and fifth grades; level 8 in third, fifth, and eighth grades; level 9 in fifth and eighth grades; and level 10 in eighth grade only (Najarian, Pollack, Sorongon, & Hausken, 2009).

This assessment has established face and construct validity (Pollack, Najarian, Rock, Atkins-Burnett, & Hausken, 2005; Tourangeau et al., 2006) as well as measured reliabilities of .92 (Round 1), .95 (Round 2), .96 (Round 3), .96 (Round 4), .94 (Round 5), .93 (Round 6), and .87 (Round 7) (Najarian et al., 2009). The assessment scores were calibrated using Item-Response Theory (IRT) (Hambleton, Swaminathan, & Rogers, 1991), which yields scale scores (estimates of a child's performance on the whole set of assessment questions in each content

domain) and standardized T-scores (report children's performance relative to their peers) of reading ability. IRT procedures obtain probability estimates for all levels at all rounds so that longitudinal gains in specific skills could be measured. Because analyses in this study were concerned with change in reading scores over time, it was appropriate to use scale scores of reading ability so that probability-based estimates of a child's performance on the whole set of assessment questions could be obtained, which is an indication of overall mastery. Change in reading ability over time was quantified by using longitudinal gain/change scores. Gain/change scores were computed for each participant by subtracting each child's Time 1 score from his or her Time 2 score (Gain = Time 2 – Time 1). For example, in order to compute children's gain in reading ability from the beginning of kindergarten through eighth grade, Gain = Eighth Grade (Spring) IRT Scale Score – Kindergarten (Fall) IRT Scale Score. With the exception of the latent growth mixture model, all analyses utilized this metric of reading ability. For purposes of being able to compare predicted reading trajectories to a meaningful and easily interpreted group mean, T-scores (IRT scores standardized to a mean of 50 and standard deviation of 10) were used in the final analysis of the present study.

SES. Family SES is a composite variable comprised of: father/male guardian's education; mother/female guardian's education; father/male guardian's occupation; mother/female guardian's occupation; and household income. Parent occupation was recoded to reflect prestige according to the 1989 General Social Survey (GSS; Davis & Smith, 1989) prestige score of the occupation. A categorical SES variable was created to indicate the quintile (1 = low, 2 = low-middle, 3 = middle, 4 = high-middle, 5= high) for the value of the family SES. This categorical variable is used in subsequent analyses. For analyses using a trichotomous categorization of SES, 'low' and 'low-middle' were combined into one 'low SES' group, the

'middle' group represented 'middle SES' and 'high-middle' and 'high' were combined into one 'high SES' group. For analyses requiring binary coding of family SES, the 'low' and 'low-middle' groups were combined into one 'low-SES' group and the 'high-middle' and 'high' groups were combined into one 'high-SES' group.

Social Support. Parental social support was assessed with a 6-item, study-specific social support scale collected in the spring of third grade (round 4), see Appendix A for the social support scale. This scale included items assessing emotional support, such as "if my child is sick, friends or family will call or come by to check on how things are going;" informational support, such as "If I have troubles or need advice, I have someone I can talk to;" and instrumental support, such as "If I have an emergency and need cash, family or friends will loan it to me." Mothers responded to these items on a three-point scale that included: 1 = never true, 2 = sometimes true, and 3 = always true. These items were recoded so that the scoring of the social support scale begins with 0 rather than 1 (i.e., 1 recoded as 0, 2 recoded as 1, and 3 recoded as 2), so that the scale reflected a true ratio level of measurement. Mothers' responses were summed to create a continuous variable with a range from 0 to 12 (M = 9.52, SD = 2.13), with higher scores indicating greater social support. A Principle Components Analysis (PCA) with a varimax rotation (which assumes that factors are orthogonal) was performed on the 6-item scale, refer to Table 1 for list of items and relevant factor loadings. An examination of both the eigenvalues and the rotated matrix indicated the presence of one distinct factor (eigenvalue > 1). This one factor accounted for 49.51% of the total scale variance. Reliability analyses were performed on these 6 items to investigate whether the social support scale is internally consistent. Based on the overall scale reliability (α = .780), acceptable inter-item correlations

(.4-.6), and strong item-total correlations (>.5), the social support scale appeared to be a reliable measure of social support.

For the purposes of specific aims/statistical analyses requiring the use of a dichotomous measure of social support, the continuous variable was separated into quartiles and those values less than or equal to the value representing the cutoff for the bottom quartile were grouped into a 'low social support' group (parents with self-reported social support scores ranging from 0-8) and those values greater than or equal to the value representing the cutoff for the upper quartile were grouped into a 'high social support' group (parents with self-reported social support scores of 11 and 12).

Teacher Quality. Teacher education was assessed in the teacher interview with the following response options: High school diploma or GED, Associate's Degree, Bachelor's Degree, At least one year of course work beyond a Bachelor's but not a graduate degree, Master's, Education specialist or professional diploma based on at least one year of course work past a Master's degree level, Doctorate, or Other. Teacher area of certification was one of three possible response options: elementary education, early childhood, or other. Together, information from these two variables was used to construct a composite variable that was used to assess the impact of teachers having a graduate degree on their students developing reading ability. The composite variable was constructed as follows: 3 = graduate degree was in elementary or early childhood education, 2 = graduate degree was not in a field related to elementary or early childhood education, and 1 = teacher did not have a graduate degree (reference group).

For analyses involving the measurement of teacher quality over time, a continuous measure of 'teacher quality' was created by summing each of the dummy coded teacher quality

variables measured at Spring-Kindergarten, Spring-First Grade, Spring-Third Grade, and Spring-Fifth Grade. This continuous variable ranged from a minimum of 4 to a maximum score of 12 (M = 8.08, SD = 1.11). The constructed composite variable of teacher quality that represented the quality of children's teachers across the elementary schools was then dichotomized into a "high/low" measure of teacher quality by separating the variable into quartiles and those values less than or equal to the value representing the cutoff for the bottom quartile were grouped into a 'low teacher quality' group (children with teacher quality scores ranging from 0-6) and those values greater than or equal to the value representing the cutoff for the upper quartile were grouped into a 'high teacher quality' group (children with teacher quality scores ranging from 8-12).

Analytic Methods

Building the dataset. The first step in the statistical plan required building the dataset for the specified aims of the study. This required gathering information from various sources (e.g. parent interview, teacher interview, and child assessment) from various rounds (e.g. round one (Fall-Kindergarten), round two (Spring Kindergarten) etc.) depending on the nature of the question asked in individual specific aims. Additionally, the use of sampling weights when conducting analyses using data from this dataset is necessary due to the sampling procedure of the ECLS-K. As the ECLS-K is not a simple random sample, not all schools, teachers, and children had an equal probability of selection. As a result, not all children, parents, teachers, and schools participated. Use of the ELCS-K weights allows a researcher to make statements about the entire population of U.S. children who were in kindergarten in 1998-99. The sampling weights allow for these types of statements to be made by adjusting for differential selection probabilities and reducing bias associated with unit nonresponse by adjusting for differential unit

response (adjusting for missing data on an entire instrument or interview). The use of these weights is necessary if inferences are to be made at the population level. The ECLS-K (K-8th Grade) dataset contains 74 sampling weights. The appropriate selection of sampling weights is dependent on three factors: the level of analysis (e.g. child, parent, or teacher), the data rounds used in analyses (e.g. Fall Kindergarten, Spring Kindergarten, Fall First Grade, etc.), and the source of the data (e.g. child assessments, parent interviews, and/or teacher questionnaires).

There are a few commonly accepted practices when it comes to the application of sampling weights to data. The first method requires the use of applying replicate weights to the data. The ECLS-K contains 90 replicate weights for each of the 74 sampling weights. The 90 replicate weights are used for researchers interested in employing replication methods such as the Jackknife method to produce approximately unbiased estimates of standard errors (see Wolter (1985) for a discussion of replication methods). Another commonly accepted practice involving sampling weights involves the use of normalizing sampling weights and adjusting them by the design effect (Hahs-Vaughn, 2005). The sampling weights provided in the ECLS-K dataset are what are known as 'raw weights'. Raw weights sum to the population size (N), rather than the actual sample size (n) (Kaplan & Ferguson, 1999); therefore, any estimates that are sensitive to the sample size will be affected when using the raw weight. Thus, if the raw weight is used, it is highly probable that any inferential test will most likely be significant as the software will use the population rather than the sample size. A way to address this problem is to make the sampling weight relative to the sample size, or normalize the weight, by dividing the raw weight by its mean, thereby preserving the sample size (Hahs-Vaughn, 2005). Normalized weights sum to the actual sample size (n) and address sample size sensitivity issues while still incorporating sampling weights (Kaplan & Ferguson, 1999). Applying the normalized weights

ensures that the estimated standard errors are accurate given a simple random sample, however, given that the ECLS-K is not a simple random sample, an additional step must be taken to account for potential dependence among observations (a natural by-product of multi-stage probability designs) (Stapleton, 2002). The final step requires the use of a 'design effect'. The design effect measures the impact of departing from simple random sampling on the precision of sample estimation and is the ratio of the estimated variance of a statistic derived from the consideration of the sample design employed to that derived from the formula for simple random samples (Hahs-Vaughn, 2005). Design effects for specific measures can be found alongside other psychometric information in the methodology portion of the 'Users Manual' for each round of data collected. The design effect is then used in conjunction with the appropriate sampling weight to estimate a normalized weight adjusted by the design effect. The adjusted weight is calculated by dividing the normalized weight by the design effect. The analyses are then conducted by applying the new, adjusted weight. Utilizing this sample weighting method allows for the use of the "weight cases by" function in statistical programs like SPSS 21 and yields very similar sample variance and standard error estimates as to those derived by sample weight replication methods. Further, the importance of the design effect adjusted weight is that, with its application to the data, the results reflect the underlying population (in this case, a nationally representative sample) regardless of the sample size reflected from the analysis (Hahns-Vaughn, 2005).

Hypothesis 1. In order to test the hypothesis that as children enter kindergarten their reading ability differs by family SES, data was used from round 1 (Fall-Kindergarten) from the parent interview (composite SES variable) and child assessment (reading). Because this was a cross-sectional analysis including parent interview data in combination with child assessment

data in round 1, the cross-sectional weight C1PW0 was used for this analysis. The analytic sample for this hypothesis included 16, 862 children. This sample size reflects the number of observations with positive values on the sample weight for parent and child data at kindergarten entry.

Hypothesis 2. In order to test the hypothesis that teacher quality would moderate the relationship between family SES and gains children make in reading ability across the kindergarten year, information from the child assessment (reading) at round 1 was used and information from the parent interview (SES) and teacher interview (teacher quality) at round 2 (Spring-Kindergarten) were used. Because this was a longitudinal analysis including child assessment data from both fall and spring rounds of data collection in combination with at least one or more rounds (fall and/or spring-kindergarten) of parent and/or teacher-level questionnaire data, the longitudinal sample weight BYCOMW0 was used for this specific analysis. Among children that stayed in the same school across the kindergarten year, and those that had a non-zero longitudinal weight across the kindergarten year, the final analytic sample for this aim included data on 15,503 children.

Hypothesis 3. In order to test the hypothesis that the availability of parental social support will differ by SES as children are finishing third grade, information from the parent interview (SES & Social Support) in round 5 (Spring-Third Grade) was used. As this was a cross-sectional analysis examining parent interview data alone from spring-third grade, the cross-sectional sample weight C5PW0 was used for this specific analysis. Including observations with a non-zero cross sectional weight in third grade, the final analytic sample for this aim included data on 13,147 children.

Hypothesis 4. In order to test the hypothesis that the availability of social support will moderate the relationship between SES at school entry and children's reading ability as children finish third grade, information from the parent interview in round 1 (SES) and round 5 (Social Support) was used in combination with information from the child assessment at round 5 (Reading Ability). As this was a longitudinal analysis examining data from round 1 and round 5, the longitudinal sample weight C245CW0 was used for this specific analysis. Including observations with a non-zero longitudinal weight, the final analytic sample for this aim included data on 13,023 children.

Hypothesis 5. In order to test a) whether gains in reading ability over time, from kindergarten entry through the end of eighth grade, vary by family SES at kindergarten entry; b) whether teacher quality moderates this relationship; and c) whether SES-based gaps in reading ability increase over time, from kindergarten to eighth grade, information obtained from round 1 (SES, child reading ability), round 2 (teacher quality), round 4 (teacher quality), round 5 (teacher quality), round 6 (teacher quality), and round 7 (SES, child reading ability) was used. As this was a longitudinal analysis including data from six rounds of data collection involving the full sample of children, the longitudinal sampling weight C1_7FC0 was used. The final analytic sample for this specific analysis included data for 7,803 children.

Hypothesis 6. To test the hypothesis that gains in reading ability over time, from school entry to the end of eighth grade, will vary by the availability of parental social support during the elementary school years, information obtained from round 1 (child reading ability), round 5 (parental social support), and round 7 (child reading ability) was used. As this was a longitudinal analysis including data from rounds 1, 5, and 7, the longitudinal sampling weight C2_7FC0 was used. The final analytic sample for this specific analysis included data for 8,503 children.

Hypothesis 7. To test the hypothesis that the availability of parental social support moderates the relationship between family SES at kindergarten entry and gains in children's reading ability, from school entry to the end of eighth grade, information obtained from round 1 (SES, child reading ability), round 5 (parental social support) and round 7 (child reading ability) was used. These rounds of data needed for this analytic sample were identical to those used in hypothesis 6, thus the same longitudinal sampling weight (C2_7FC0) was also used for this specific analysis.

Hypothesis 8. To test the hypothesis that family SES and the amount of social support available to the parent predict class memberships of gains/losses typologies in reading ability over time, information obtained from round 1 (SES, child reading ability), round 2 (child reading ability), round 4 (child reading ability), round 5 (child reading ability, parental social support), round 6 (child reading ability), and round 7 (child reading ability) was used. As this was a longitudinal analysis including data from six rounds of data collection involving the full sample of children (similar to analytic sample for testing hypothesis 5), the longitudinal sampling weight C1_7FC0 was used. The final analytic sample for this specific analysis included data for 7,803 children.

CHAPTER 3

RESULTS

Data Cleaning and Descriptive Statistics.

The first step of data analysis consisted of data cleaning and computing general descriptive statistics for variables of interest to test for assumptions of normality. Bi-variate scatterplots of variables were inspected for linearity and homogeneity of variance. Variables were examined for univariate outliers by calculating z-scores for each variable, with z-scores > |3.29| indicating possible outliers. Additionally, regression analyses were performed to examine residuals for distance and leverage, residual values with substantial gaps from the rest of the distribution were interpreted as being indicative of possible outliers. Histograms were also inspected for univariate outliers, cases appearing unattached to the rest of the distribution were also considered as potential outliers. In addition to histograms providing information pertaining to univariate outliers, they also were examined for normality (e.g. skew and kurtosis). Given the large sample size and the dependence of the calculation of significance tests for skew and kurtosis on sample size, it was deemed inappropriate to interpret test statistics alone (i.e. these tests will likely demonstrate "significant" non-normality when it may not be all that substantial or meaningful). Rather than interpreting significance tests, variables distributions were examined by looking at Q-Q plots in conjunction with histograms to determine instances of non-normality. In cases where violations of normality were detected, a linear or non-linear transformation (depending on the nature of the departure from normality) was applied to the data to return the data to normality. In cases where transformations were unsuccessful in returning data to approximate the qualities of normal distributions, the variables were left untransformed to keep values in original scale of measurement to aid in interpretability. After accounting for the

nature of the missing data due to legitimate skip patterns (missing data legitimately because of previous response on questionnaire) and examining patterns of missing data for missingness due to study variables of interest (e.g. SES, reading ability, social support, etc.), it was determined that the data at least met the definition for missing at random (MAR) (Little & Rubin, 1987).

Descriptive information for children's reading ability by family socioeconomic status at each wave of data collection included in the study is presented in Table 2. Levels of social support available to the parents at each level of family SES are also presented in Table 2. A correlation matrix of children's reading IRT scale scores at each wave of data collection is presented in Table 3. As expected and illustrated in Table 2, children's reading ability increases both as they progress in schooling as well as by family SES. Additionally, as expected and illustrated in Table 3, standardized assessments of children's reading ability at Kindergarten (Fall), Kindergarten (Spring), First Grade, Third Grade, Fifth Grade, and Eighth Grade are all highly intercorrelated.

Hypothesis Testing.

Hypothesis 1: Children's reading ability will significantly differ by their family SES. In order to test the hypothesis that children's reading ability varies by their family SES as they enter kindergarten, a one-way ANOVA was conducted and significant between-group differences were found, $F(4, 16857) = 124.59$, $p < .001$. Tukey's HSD post-hoc procedures were run following the detection of a significant omnibus effect to determine the presence of significant between-group differences. Post-hoc procedures revealed significant ($p < .05$) between group differences for all group comparisons. Figure 1 depicts a clear linear relationship between family SES and children's reading ability at kindergarten entry.

To further elucidate the meaningfulness of the significant between-group differences detected in the post-hoc procedures, between group differences were converted to measures of effect size using Cohen's *d* (Cohen, 1988). Table 4 presents calculated effects sizes of children's reading ability from different SES-groups, demonstrating the impact that SES alone can have on children's reading ability prior to entering formal schooling.

Hypothesis 2: Teacher quality will moderate the relationship between family SES and reading gains across the kindergarten year. To test the hypothesis that teacher quality would moderate the relationship between family SES and gains children made in reading ability across the kindergarten year, a 2 (teacher quality) X 5 (SES) between-subjects ANOVA was conducted. Only two levels of teacher quality were included (as opposed to the initial 3-level variable) because there were not enough cases of teachers with a graduate degree in something other than early/elementary education (cell sizes <10 in some instances). Therefore, only two categories of teacher quality were included in this analysis (Graduate Degree in Early/Elementary Education & No Graduate Degree). There was a non-significant main effect of family SES on gains in reading ability across the kindergarten year $F(4, 15298) = 1.875$, $p = .134$. Similarly, there was a non-significant main effect of teacher quality on children's gains in reading ability across the kindergarten year, $F(1, 15301) = 2.726$, $p = .107$. Additionally, the interaction term was not significant, suggesting the lack of an interactive effect between teacher quality and family SES and their combined effect on children's gains in reading ability across the kindergarten year. For descriptive statistics of children's gains in reading ability across the kindergarten year by family SES and teacher quality, see Table 5; see Figure 2 for a graphical representation of Table 5.

Hypothesis 3: The availability of parental social support will differ by SES. A one-way between-subjects ANOVA was conducted to test the hypothesis that the amount of perceived social support available to the parent at the end of third grade would differ significantly by family SES. It was initially hypothesized that parents in the upper quintile of SES would report having the highest levels of social support available to them. While there were significant SES-based group differences in parent reports of social support, $F(4, 13142) = 23.00$, $p < .001$, parents from the highest SES group did not have the highest available social support, thus this hypothesis was not directly supported. It was further hypothesized that parents of the lowest SES would demonstrate the least amount of available social support. This finding was supported; see Table 6 for descriptive statistics of parental social support by family SES. This finding was further supported by Tukey's HSD post-hoc tests indicating that lowest SES group as being the only group significantly ($p < .001$) different from each quintile. This finding indicates that families in the lowest SES-group are the most vulnerable for having less supportive social networks. To gain a better understanding of the true magnitude of between-group (SES) differences in social support, effect sizes (d) were computed comparing between group differences; see Table 7 for these effect sizes and between-group comparisons.

Hypothesis 4: Parental social support will moderate the relationship between SES and children's reading ability. A 2 (Low/High Social Support) X 3 (Low/Mid/High SES) between-subjects ANOVA was conducted to determine if the perceived availability of parental social support moderates the relationship between SES and children's reading ability at the end of third grade. A main effect ($d = .24$) of Social Support was found as the reading ability of children whose parents had high amounts of social support ($M = 120.59$, $SD = 32.61$) was significantly higher than the reading ability of children whose parents reported low amounts of social support

(M = 112.66, SD = 32.50), $F(1, 1181) = 6.447$, $p = .011$. A main effect of SES was found as the reading ability of children at the end of third grade was found to significantly differ by parental SES, $F(2, 1181) = 71.806$, $p < .001$. Tukey's HSD post-hoc tests revealed that the reading ability of children in low SES families (M = 107.80, SD = 33.96) was significantly lower ($p < .001$) than children of middle SES families (M = 120.48, SD = 27.85) (d = .41) and high SES families (M = 132.95, SD = 27.70) (d = .81). The reading ability of children in middle SES families was also found to be significantly lower ($p < .001$) than children of high SES families.

A significant interaction was found between parental social support and SES and their effect on children's reading ability, $F(2, 1181) = 3.550$, $p = .029$. Simple effects tests were conducted at each level of family SES to determine the effects of parental social support on children's reading ability at the end of third grade.

Simple effects tests for low SES families revealed that children's reading ability was better when their parents had higher social support available to them (M = 111.35, SD = 31.82) as compared to the reading ability of children whose parents had lower amounts of social support available to them (M = 104.41, SD = 32.18), $F(1, 1084) = 10.947$, $p = .001$ (d = .22).

Simple effects tests for middle SES families revealed that children's reading ability was better when their parents had higher social support available to them (M = 124.45, SD = 28.91) as compared to the reading ability of children whose parents had lower amounts of social support available to them (M = 118.24, SD = 26.72), $F(1, 524) = 4.039$, $p = .045$ (d = .22).

Simple effects tests for high SES families revealed no significant differences in children's reading ability between those whose parents had high amounts of social support available to them (M = 136.33, SD = 26.72) and those whose parents had low amounts of social support available to them (M = 136.62, SD = 26.37), $F(1, 970) = .019$, $p = .891$ (d = .01).

In other words, it appears that parental social support has a specific buffering effect as it pertains to the detrimental effects of lower-SES environments on children's reading ability; high amounts of parental social support were particularly protective for families of low and mid-SES, but not those of high SES, Figure 3 depicts this specific buffering effect.

Hypothesis 5: Reading ability over time will vary by SES and teacher quality will moderate this relationship. SES-based gaps in reading ability seen at the end of eighth grade will be larger than SES-based gaps seen at kindergarten entry. Hierarchical regression analyses were employed to test the utility of family SES at kindergarten entry, teacher quality across the elementary school years, and the interactive effect of the two predictors in predicting gains in reading ability made from kindergarten through the end of eighth grade. Concurrent family SES (SES at end of eighth grade) was explored as a potential covariate due to the possibility that families may have changed their SES from kindergarten to 8th grade, and this change in financial situation would not be picked up by just the kindergarten-SES variable alone. Given that SES at kindergarten and 8th grade were highly positively correlated (r = .90), it was determined that in this sample, family SES was quite stable, thus there was no need for the inclusion of a covariate. Family SES at kindergarten entry accounted for a significant amount of variance (R^2 = .07) in gains made in reading ability, $F(1, 979) = 73.967$, $p < .001$. The addition of teacher quality in step 2, did not significantly aid in the prediction of reading gains over time, (R^2 = .071), $F_{inc}(2, 978) = 1.211$, $p = .271$. Additionally, teacher quality did not moderate the relationship between family SES at kindergarten entry and gains in reading ability as the centered interaction term entered in step 3 did not significantly aid in the prediction of reading gains over time, (R^2 = .073), $F_{inc}(3, 977) = 1.409$, $p = .235$.

To test whether SES-based gaps in reading ability increased over time, a one-way ANOVA was conducted to examine group differences (family SES at kindergarten entry) in reading ability at the end of the eighth grade year. The one-way ANOVA revealed significant group differences in reading ability at the end of the eighth grade year, $F(4, 1771) = 108.726$, $p < .001$. Effect sizes were computed and these effect sizes were compared to those computed in the testing of hypothesis 1 (effect sizes of relationship between family SES at kindergarten entry and reading ability at kindergarten entry); see Table 8. The results reflect the widening achievement gaps over time based on family SES at school entry. This widened gap is particularly prominent when looking at the change in effect size when comparing low SES to high SES reading ability at kindergarten entry ($d = 1.11$) and at the end of eighth grade (1.51). There is an initial gap in reading ability of approximately 1 standard deviation and this gap widens to over 1.5 standard deviations.

Hypothesis 6: Gains in reading ability across the school years will vary by parental social support at the end of third grade. A one-way ANOVA was conducted examining gains in reading ability across the school years for group differences in social support. Children of parents with highly supportive social networks ($M = 132.15$, $SD = 30.92$) did not demonstrate significantly better improvements in reading ability when compared to children whose parents had social support networks that were less supportive in nature ($M = 132.15$, $SD = 33.63$), $F(1, 911) = .000$, $p = .999$. These results are not it in support of initial hypotheses.

Hypothesis 7: Parental social support will moderate the relationship between SES and children's reading ability from kindergarten thru eighth grade. A 2 (High/Low Social Support) x 3 (Low/Mid/High SES) between subjects ANOVA was conducted to test the main effects of SES and Social Support as well as the moderating effect of parental social support on the

relationship between SES at kindergarten entry and gains in reading ability from school entry to the end of middle school. A significant main effect of SES was found, $F(2, 466) = 15.509$, $p < .001$. Tukey's HSD post-hoc tests revealed that children from high SES families had significantly ($p < .001$) larger gains in reading ability than their peers from low- and mid-SES families. However, no significant main effect of Social support was found, $F(1, 466) = .003$, $p = .959$. Similarly, no significant interaction between social support and SES was detected, $F(2, 466) = .522$, $p = .594$. These findings (particularly the findings pertaining to the interaction between social support and SES and their effect on children's gains in reading ability over time) are not in support of the initial hypothesis that the availability of parental social support during the elementary school years would moderate the relationship between family SES at school entry and gains in reading ability across the school years.

Hypothesis 8: Depending on group membership of SES and social support, children will be classified into different typologies of reading performance trajectories over time. In order to estimate types of reading trajectories for children over time, a latent growth mixture model (LGMM) was conducted using Mplus v 5.0 (Muthén & Muthén, 2007). Children's standardized reading scores at rounds 1, 2, 4, 5, 6, & 7 were used as the observed variables in this analysis. The main advantage of using a LGMM for the purposes of this study is the ability to estimate children's reading trajectories over time. Growth mixture models are extensions of multi-group growth models in which parameter estimates of the growth trajectory are estimated separately for each group (class). These approaches are confirmatory in that the number of classes (latent statistical populations) and the general scale (intercept) and shape (slope) of the trajectory of each class must be specified a priori. Probabilities of group (class) membership are estimated along with growth parameters. An ideal growth trajectory is then estimated for each

specified class. The growth trajectories for each individual in the sample are then compared to the class ideal trajectory using Bayesian conditional probability estimators. Each individual trajectory is compared to each ideal trajectory and then it is assigned to be a member of the latent class for which it has the highest conditional probability of belonging to. This is a dichotomous procedure in that each individual can only be assigned to one latent class. However, the estimated conditional probability for the class to which the individual was assigned is also stored and indexed (Partridge, Corobana, & DeGroot Hanawalt, 2005). A reliable indicator of the adequacy of model fit is determined by the average of the indexed conditional probabilities for each class; this average probability across all classes is referred to as entropy. Additionally, other indicators of adequate fit include the Bayesian Information Criterion (BIC), no less than 1% of total count in one class, and high posterior probabilities (average latent class probabilities for more likely latent class membership). As the average probability of estimated class membership approaches 1.00, the entropy index approaches 1.00; thus, entropy estimates closer to 1.00 are indicative of adequate model fit. In the case of the BIC, and other information criteria indices, the lower the value the better the model fit (Jung & Wickrama, 2008).

Although this statistical approach requires a confirmatory approach in terms of having to specify number of classes and slope of intercept values, it also is somewhat exploratory in that one can specify multiple models and investigate fit indices for evidence of best model fit. Given that it was hypothesized that there would be three basic reading trajectories (consistent gains, consistent losses, no change) a three-class solution was initially tested. Model fit indices from the three class model were then compared with two class and four class models for comparative purposes. The three-class model's BIC = 590618.827, compared to BIC = 654022.871 for the four-class model and BIC = 596652.324 for the two-class model. Additionally, the entropy

values for the two-class (.632) and four-class (.70) models were lower than for the three-class model (.750). Furthermore, information regarding the latent class probabilities for most likely latent class membership provided further evidence that the three-class solution provided clear class distinctions (see Table 9 for this information). The three-class solution indicates that about 60% of the population falls into a class typified by starting off with relatively average reading scores at kindergarten and remaining average through the end of eighth grade. Approximately 29% of the population can be classified as having a reading trajectory that starts off below average but consistently gains over time eventually have reading scores very similar to those in class one. Roughly 11% of the population can be classified as having a reading trajectory that starts off above average but consistently decreases over time and eventually having reading scores slightly higher but very similar to those in class one and two. The model estimated average growth trajectories for reach class are presented in Figure 4, see Table 10 for the estimated means at each time point by class membership.

Next, an attempt was made to identify combinations of parental social support and family socioeconomic status that might be related to differential class membership in children's reading trajectories. Given that in previous analyses, a buffering effect of social support was found for children from low-income families, it was hypothesized that this combination (low SES/high social support) would be significantly associated with the latent class of children that start off low in reading but gain consistently over time. A 4-level variable combining measures of SES (High/Low) and Social Support (High/Low) was constructed to determine if class membership differed significantly by the varying levels of SES and Social Support. The variable was constructed as follows (Low SES/Low Social Support; Low SES/High Social Support; High SES/Low Social Support; High SES, High Social Support). A chi-square test of independence

was conducted and it was determined that children's class membership in terms of their reading trajectory did not differ significantly by their family level of SES and social support χ^2 (6) = .064, p = .711, see Table 11 for Class membership X SES/Social Support crosstabulation.

CHAPTER 4

DISCUSSION

The purpose of this study was to better understand the protective effect that social support has on the development of reading in children from a range of SES backgrounds. Because other studies have suggested the importance of teacher quality on children's reading ability, this was also tested. As expected, family SES and the availability of parental social support were important factors in predicting children's reading ability. More specifically, when measured at concurrent time points, social support was found to have a unique buffering effect on the relationship between SES and children's reading ability such that higher amounts of parental social support served as a protective factor for the development of children's reading ability for children who were in lower SES family environments. Contrary to expectations, teacher quality as operationalized in the present study did not have a significant impact on the relationship between SES and children's reading ability. Further, children's probable class membership in typology of reading trajectory over the school years was not found to vary by a combined measure of family SES and parental social support. The following pages describe these findings (and potential reasons for unexpected findings) in greater detail.

As indicated in the testing of hypothesis one, children's reading ability was found to vary by family SES as they entered kindergarten. These findings replicate those of Lee & Burkam (2002) who tested this relationship shortly after the first waves of data collection were released by NCES. The replicated findings were extended a bit further in these analyses by looking at effect sizes corresponding to between-group (SES) differences in children's reading ability at kindergarten entry. This is an important consideration as it provides a true measure of the extent of the SES-based differences in reading ability that are present at the start of formal schooling.

There is a wealth of research (e.g. Entwisle, Alexander, & Olson, 1997; Lee & Burkam, 2002; Snow, Burns, & Griffin, 1998; Stipek & Ryan, 1997) indicating that gaps in reading ability exist at school entry as a product of differences in family SES. The analyses included here extend this research by providing evidence of these SES-based gaps in reading ability in a nationally representative sample of children entering kindergarten. Further, the results indicate that these gaps in reading ability increase as the disparity in SES becomes larger as well (d = .62 when comparing reading ability of Low-SES to Middle-SES children; d = 1.11 when comparing reading ability of Low-SES to High-SES children). These findings truly reflect the extent of this learning gap; children from low-SES families enter school over 1 standard deviation behind their peers from high-SES families. Building on these findings, further analyses tested in hypothesis 7 indicate that not only are there large gaps in children's reading ability by family SES at school entry, but that these gaps widen considerably over time. The nature of these findings is consistent with the notion of the "Mathew Effect" proposed by Stanovich (1986), suggesting that SES-based gaps in overall reading ability are pervasive at school entry and not only are they persistent across the school years up to the end of eighth grade but the size of these gaps increase over time. These findings are also consistent with previous research conducted by the NICHD Early Child Care Research Network (2005) demonstrating that children in the lowest income group start out roughly 1 *SD* below the mean in developmental abilities related to school success and remain behind throughout schooling until at least age 8.5.

Although child reading ability was expected to differ by family SES, it was expected that the extent of the impact would differ by the quality of the teacher in the classroom. Despite these expectations, not only was teacher quality not related to significant differences in children's reading ability in kindergarten, the hypothesis that teacher quality would moderate the

relationship between SES and children's reading ability was not supported either. The lack of significant findings was quite surprising, given previous research; however, there are several possible mechanisms that may help to explain why teacher quality was not found to be an important variable in this study. First, the manner in which 'teacher quality' was measured was actually a constructed variable reflecting teacher education (graduate degree in early/elementary education vs. graduate degree in some other area vs. no graduate degree at all). The reason for measuring teacher quality in this way was based on previous research investigating the relationship between indicators of teacher quality and children's school outcomes using ECLS-K data. Phillips (2010) used data from the ECLS-K to explore the efficacy of using measures of teacher certification, competency, education, and experience to predict student improvements in reading ability. The authors found that teacher education as conceptualized in this study was the only useful measure of 'teacher quality'; however, this result appeared to be driven mainly by 'at-risk' students. In the case of the current study, it may be that these effects wash out when looking at the entire analytic sample because it contained children from all demographic backgrounds. Additionally, restricted variance could also potentially explain the lack of an impact of teacher quality as most kindergarten teachers do not have graduate training at all. Furthermore, another point to consider, as raised by Early et al. (2007), may be that our nation's policies focusing solely on increasing teacher education will not suffice to improve classroom quality or to maximize children's academic gains. It is likely that this is an overly simplistic view of what makes for a quality teacher and a more comprehensive approach incorporating professional development activities targeting teacher-child interactions is necessary to truly capture such a broad construct as teacher quality.

Building upon analyses focusing on the impact of SES and teacher quality on children's reading ability; the focal part of this study was the exploration of parental social support as an important contextual variable to consider when thinking about sociodemographic differences in reading ability. A crucial first step was to determine the extent of SES-based differences in available social support. Parents with the lowest SES demonstrated the least amount of available social support and these families were the only families demonstrating significantly lower amounts of social support when compared to families from all other SES quintile-based groups. These initial analyses indicate that low-SES families are those most vulnerable to the effects of having less supportive social networks. To gain a better understanding of the types of effects that less supportive social networks can have on children's reading ability, further analyses focused on the moderating effect that social support can have on the relationship between family SES and children's reading ability. Findings indicated, as hypothesized, that social support has a specific buffering effect on the relationship between SES and children's reading ability. In other words, having a supportive social network appears to be a potential protective factor, in terms of children's reading ability, but only for those children that are at the greatest risk for experiencing reading-related difficulties. This finding aligns with initial theoretical work by Cohen and McKay (1984) who first proposed a buffering hypothesis as it relates to social support. The basic premise of a buffering hypothesis states that a supportive social network can presumably buffer an individual with negative outcomes that accompany stressful environments. The present study extends these findings by not only demonstrating this specific buffering effect in a nationally representative sample of children and families, but also by potentially presenting evidence for an inter-generational transmission of this effect. That is, parents in stressful environments but with available social supports in place seem more equipped to provide an

environment in which their child can succeed academically as evidenced by increases in reading ability. It should be noted, however, that these findings are cross-sectional in nature and as a result should be interpreted with caution from a causal standpoint.

This finding is important even if only to identify yet another important contextual variable to consider in the realm of children's reading development. Taking it a bit further, however, this finding raises important questions pertaining to current and future intervention programs as well as the way in which we measure the home environment and sociodemograhpic factors in general. Beginning with a discussion of intervention programs aiming to improve academic outcomes, previous research has concluded that antipoverty programs are effective intervention strategies when children's academic outcomes increase by 5% of a standard deviation for every $1,000 families receive in financial assistance (Duncan et al., 2011). Findings from the current study suggest that families could improve their children's reading outcomes by 22% of a standard deviation by increasing their social support from low amounts to high amounts. The critical question here is how much it would cost to actually increase amounts of parental social support? This is a question that cannot be answered within the scope of the current study; however, it is a question that could be explored in future studies. Another important area of research should come out of other intervention programs, particularly preschool compensatory programs that aim to improve children's academic outcomes. These programs (such as Project Head Start and many other similar programs) take a two-generational approach to child education by involving the parent in the education of the their child and providing opportunities for engagement. The findings from this study suggest that an important process to focus on may be the improvement of parental social support. A critical future question to explore is whether these programs actually are improving parental perception of

available social support. Furthermore, future research should explore specifically what types of social support (emotional, instrumental, informational, appraisal) are most important in helping them to provide an optimal learning environment for their young children.

If current intervention programs are not currently improving parent's actual or perceived social support, the question then becomes one of how curriculum developers and early childhood program administrators should go about intervening at this specific level. This has been a pressing question for quite some time for researchers studying social support as a potential protective factor for families. A meta-analysis conducted by Hogan, Linden, and Najarian (2002) attempted to answer this question by examining the preponderance of research in this area. The authors examined the efficacy of group vs. individual interventions, professionally led vs. peer-provided treatment and interventions aiming to increase network size vs. those focusing on building social skills, and came up with inconclusive results. A potential reason for the inconclusive results may be the overall difficulty in delivering such an intervention. One possible solution to this problem given the wide-spread availability and use of personal devices with access to the internet (e.g. smartphones, tablets, etc.) is a web-based delivery of a social support intervention. Early work by Barrera, Glasgow, McKay, Boles, and Feil (2002) demonstrated significant evidence for somewhat long-term effects of Internet-based support programs. A recent meta-analysis of this literature by Nieuwboer, Fukkink, and Hermanns (2013) concluded that Internet-based support groups provide a variety of opportunities for sharing peer and professional support when it comes to specific parenting support. In addition to the obvious benefits of Internet-based support interventions having an easier and further reaching delivery, there may also be an added benefit that is especially important for social support interventions. As suggested in recent research, a crucial component predictive of the efficacy of

a social support intervention is how the recipient perceives the delivery of the intervention (Bolger et al., 2000; Bolger & Amarel, 2007). More specifically, it seems that for received support to be optimally beneficial, it must be relatively invisible to the recipient. Because the Internet is such a widely used source of information in today's society, a web-based social support intervention might be viewed by a parent as just another place to find useful information, and thus perceived as more invisible due to the benign and innocuous nature of seeking information daily on the Internet.

Despite the significant finding related to the buffering effect of social support on the relationship between SES and children's reading ability at third grade, this buffering effect was not present when examining children's reading ability at the end of 8th grade. Not only did parental support during the elementary school years not buffer the relationship between family SES and children's reading ability at the end of middle school, but at a main effect level, reading ability did not even differ significantly by the availability of parental social support. These findings run counter to hypotheses 6 & 7 and were quite surprising especially given that these relationships occurred at previous time points in the dataset (at third grade). However, a closer inspection of the nature of social support as a contextual process reveals some measurement-related issues that may help to explain the lack of expected findings.

First, given that social support was only measured at one time point (third grade) in the ECLS-K, one must consider the notion that the amount of social support a parent reports when their child is in third grade may be very different from the amount of social support that a parent might report when their child is in eighth grade. One obvious potential reason for this is simply the stability of social support in and of itself. In fact, recent research using the Fragile Families and Child Well-Being survey indicates that living in a disadvantaged neighborhood is associated

with less social support, and more importantly, instability (moving to a worse neighborhood) leads to significant declines in perceived social support compared to those that who do not move (Turney & Harknett, 2010). Although not typically stated explicitly in the literature, most think of social support as an environmental provision. It is important, however, to be careful not to view the environment as independent from the individual. That is, people do make contributions to their own social support and how a person navigates their social environment directly impacts what it provides for them.

A very clear illustration of this, which happens to work very well for the discussion at hand, is the average low-SES parent. A defining feature of poverty is the uncertainty that accompanies it. This constant state of uncertainty can breed a sense of insecurity, a feeling of chronic stress. Early work by Weiss (1976) helps to explain the relationship between poverty and social support and why it is such a tenuous relationship at times. Weiss (1976) outlines three categorizations of stressful situations: crisis, transition, and deficit states. A crisis is a situation of sudden onset and limited duration that is seriously threatening to one's well-being and is marked by emotional arousal (e.g. electricity shut-off during winter). A transition state is a period of personal and relational change that involves a shift in a person's assumptive world. A deficit state is a situation in which an individuals' life is defined by chronically excessive demands (e.g. consistently coming up short on rent, living in fear of being evicted, etc.). The more chronically that a person is living in a deficit state, the more likely it is that they will experience multiple crises. When there is a precarious balance between demands and available resources, or when demands consistently exceed resources as is the case of those living in poverty, a seemingly small event or demand in the environment can easily upset the balance and necessitate a major adjustment in everyday life. Additionally, repeated exposure to these crises

can have a sort of cascading effect on individuals. It is the precarious nature of this balance along with the cumulative risk of living in poverty that truly makes social support such an unstable person-environment characteristic. For this reason alone, it seems pretty reasonable to think that a measure of parental social support at third grade may not be all that representative of the amount of social support a parent might actually have five years later.

Beyond not having temporally concurrent measures of parental social support and children's reading ability across all time points, another measurement-related issue pertains to the actual scale used to measure social support in the ELCS-K. The measure itself was severely negatively skewed which resulted in a substantial amount of the participants reaching their ceiling on the measure. This measurement invariance certainly impacted the predictive utility of the measure as a whole. Furthermore, given that the measure included just six items, it did not include a wide range of items tapping into multiple types (emotional, instrumental, informational, appraisal) and modalities (perceived, received, etc.) of social support. Taken together, these two measurement-related issues provide two potential reasons for why social support did not continue to be an important contextual determinant of children's reading ability as they continued through school from third to eighth grade.

The final analysis in this study examined the utility of using an index combining family SES and parental social support to predict estimated classes of reading trajectories for children across the duration of the study. Despite the fact that the latent class membership of children's reading trajectories over time were not found to differ by SES and social support as hypothesized, the structure of the latent classes themselves was noteworthy. Specifically, analyses revealed evidence for three classes of readers over time: those who start in the middle and stay in the middle, those who start low and catch up, and those who start high but slowly

taper off over time. These findings very neatly illustrate the notion of regression to the mean. Because this is a nationally representative dataset which should represent the normal distribution of reading ability, by definition the majority of the data should fall around the mean. Another interesting point about the nature of the trajectories is the variability in children's initial reading ability as measured at kindergarten entry. Children appear to start off on reading trajectories that are quite discrepant from one another. This finding reflects the tremendous variability that exists in children's developmental capacities early in childhood.

Several limitations mark the present study. First, the lack of covariates included in the analyses is a limitation from an analytic standpoint. The primary reason for the use of simple models was the exploratory nature of the study. Given that the goal of the study was to measure the nature of the relationship(s) between SES, parental social support, and children's reading ability, a concerted effort was made to study just these processes. Now, this is not to say that it is not recognized that there may be a multitude of variables that also contribute to SES-based gaps in reading ability beyond parental social support, however, these other contextual variables were not of primary focus in this study. Additionally, despite the numerous advantages that large scale, nationally representative datasets provide for researchers, these advantages are tempered by the inability of these large studies to incorporate more observational measures that can provide richer data regarding the contextual processes influencing children's reading development. For instance, a paper by Morsbach & Prinz (2006) highlights this cause for caution by identifying some of the methodological concerns related to parental self-report of parenting practices. Relatedly, recent research by Dexter & Stacks (In Press) demonstrates the added value of observing quality of reading as opposed to just relying on parental report of reading frequency. Similarly, work by Pianta and colleagues using the Classroom Assessment

Scoring System (CLASS; Pianta, LaParo, & Hamre, 2008) demonstrates the utility in using observational tools to link teacher behaviors and quality to children's growth in language and literacy rather than relying on typical teacher quality indicators such as level of education, years of experience, etc. (e.g. La Paro, Hamre, Locasale-Crouch, & Pianta, 2009; Mashburn et al., 2008; Pianta & Hamre, 2008). For this reason, a decision was made to not be overly reliant on self-reports of important contextual processes related to children's reading (e.g. family practices, environmental conditions, etc.) as self-reports can be biased and potentially reflect social desirability.

Some may suggest that a second potential limitation involves the decision to use gain scores, or difference scores when analyzing change in reading ability over time rather than using an ANCOVA. The decision to use gain scores was multifaceted. First, this analytic technique is the recommended method in the ECLS-K 'Users Manual'. Second, the use of gain scores made conceptual sense given the questions being asked in the present study. Tests of gain scores answer the following question: how do groups, on average, differ in gains? ANCOVA, on the other hand, tests a different question: given that participants start with the same score, how do they differ at posttest? Given what is known about the wide range of variability in children's reading ability, it did not seem appropriate to equate children's reading ability analytically. Additionally, gain scores have the advantage of telling us whether each group improved, stayed the same, diminished, etc. ANCOVA does not provide this same advantage as the interpretation is often challenging due to the examination of residual differences while holding constant initial differences.

Despite these limitations, the current study has several strengths. First, the use of a nationally representative sample of children eligible to attend kindergarten in the 1998-1999

academic year was a substantial benefit to the present analyses. It is essential that exploratory analyses such as these be conducted on normative samples; this contributes greatly to the external validity of the present analyses. Additionally, the longitudinal nature of the data is another advantage as it allows for the examination of children's reading development over a wide-range of years, from kindergarten through the end of middle school. Above all else, the main strength of the present study is the identification of parental social support as an important contextual variable in relation to children's reading development during the school-age years. The presence of a significant buffering effect of social support, especially given the measure of social support and its measurement issues, is very promising for future research and speaks to some policy implications highlighted by recent reading research. For example, Aikens & Barbarin (2008) suggest that any policy changes seeking to promote change within the family system (improve children's reading) should seek to promote change within the contexts that families operate as well. Moving forward, in order for interventions to truly be effective, they must provide direct supports for parents.

If nothing else, one goal of this research was to begin a discussion about the importance of identifying other contextual processes that are a larger part of the child's system as they progress toward the ultimate goal of becoming a proficient reader and ultimately, someone who succeeds in school. Bradley and Corwyn (2002) provide an excellent commentary on why developmental scientists need to do a better job of measuring all of the supportive processes that are related to 'SES'. They note that too often researchers use some composite, categorical measure of SES and assume that it is doing an adequate job of capturing true sociodemographic variability. What these categorical measures end up doing is constraining individuals to discrete classes when in reality there is so much individual variability within each class. One potential

implication of this research is that, perhaps, social support should be considered more often in cumulative risk approaches to capturing the nature of the surrounding developmental context.

Additionally, a more rigorous approach to inspecting social support is required in order to gain a more comprehensive understanding of the causal processes it has been linked to. Despite a great amount of research linking social support to improved health outcomes, the mechanisms underlying these links remain somewhat undefined. As it pertains to the relationships between SES, parental social support, and child outcomes, more research must be done to identify the nature of these relationships. For example, is social support a mediating variable between poverty and child outcomes as suggested by Leventhal & Brooks-Gunn (2000)? Or, does social buffer (i.e. serve as a moderator) low-income families from the negative effects on child outcomes as suggested by the present study as well as others (Hashima & Amato, 1994)? Are high amounts of social support a protective factor, or are low amounts of social support a risk factor? Future research must also question what types (e.g. informational, emotional, instrumental, and appraisal) and what delivery modalities (e.g. perceived, received, and invisible) of social support are most efficacious in improving child and family outcomes especially for those that need it most. These are just some of the questions that need to be addressed in order to gain a better understanding of the true nature of parental social support and its role as one of many interdependent contextual processes impacting the developmental system of the child moving toward a goal of becoming a proficient reader and ultimately, a successful student.

Table 1.

List of Items in 6-Item Social Support Scale with Relevant Factor Loadings Derived from Principal Components Analysis

Item #	Item Description	Component Factor Loading	Factor Loading
1	If I need to do an errand, I can easily find someone to watch (Child).	1	0.560
2	If I need a ride to get (Child) to the doctor, friends or family will help me	1	0.755
3	If (Child) is sick, friends or family will call or come by to check on how things are going	1	0.722
4	If (Child) is having problems at school, there is a friend, relative or neighbor I can talk it over with	1	0.753
5	If I have an emergency and need cash, family or friends will loan it to me	1	0.712
6	If I have troubles or need advice, I have someone I can talk to	1	0.701

Table 2.

Descriptive Statistics for Reading IRT Scale Scores (by data collection wave) and Social Support Scale Scores by Family Socioeconomic Status

	Family Socioeconomic Status					
	Low	Low-Middle	Middle	Middle-High	High	Total
	M (*SD*), Min-Max	*M* (*SD*), Min-Max	*M* (*SD*), Min-Max	*M* (*SD*), Min-Max	*M* (*SD*), Min-Max	*M* (*SD*), Min-Max
Reading IRT Scale Scores by Data Collection Wave						
Kindergarten (Fall)	29.75 (5.88), 21.07-100.64	32.45 (7.56), 21.07-111.98	34.03 (7.87), 22.03-103.24	36.53 (9.85), 21.45-126.54	40.78 (12.72), 23.05-133.56	36.22 (10.02), 21.07-133.56
Kindergarten (Spring)	40.21 (9.54), 22.73-137.02	44.08 (11.84), 23.36-132.34	46.22 (11.31), 23.46-108.60	48.94 (12.53), 22.66-128.58	53.89 (16.96), 24.44-156.85	47.74 (13.98), 22.66-156.85
1st Grade Spring	64.72 (18.53), 27.35-154.50	73.07 (20.94), 25.56-163.02	77.89 (20.68), 33.68-176.22	83.37 (21.98), 25.11-168.70	91.33 (24.67), 32.28-184.05	79.85 (23.62), 25.11-184.05
3rd Grade Spring	106.97 (25.52), 51.46-184.68	121.40 (25.53), 52.36-194.64	129.04 (24.85), 51.69-193.99	135.49 (24.53), 51.65-193.37	145.92 (22.29), 65.70-200.75	130.07 (27.56), 51.46-200.75
5th Grade Spring	131.05 (25.40), 65.22-198.71	144.38 (25.28), 65.57-199.99	152.11 (23.11), 69.92-201.31	158.04 (22.07), 71.74-202.22	167.51 (19.67), 76.10-203.22	152.74 (25.86), 65.22-203.22
8th Grade Spring	148.19 (29.03), 86.80-208.90	163.53 (27.05), 86.63-207.70	170.95 (24.45), 89.11-208.90	177.35 (23.17), 87.74-208.90	187.26 (17.88), 99.96-208.90	171.80 (27.17), 86.63-209.90
Social Support Scale Score						
3rd Grade Spring	9.19 (2.42), 0-12	9.64 (2.13), 0-12	9.72 (2.00), 0-12	9.79 (1.74), 0-12	9.66 (1.81), 0-12	9.62 (2.00), 0-12

Table 3.

Correlation Matrix of Reading IRT Scale Scores at Each Wave of Data Collection Included in the Study

	1	2	3	4	5	6
1. Kindergarten-Fall						
2. Kindergarten-Spring	.825*					
3. 1st Grade-Spring	.679*	.760*				
4. 3rd Grade-Spring	.532*	.567*	.719*			
5. 5th Grade-Spring	.492*	.529*	.679*	.848*		
6. 8th Grade-Spring	.424*	.442*	.561*	.734*	.782*	

Note: *p<.001

Table 4.

Effect Sizes (d) of SES-based Group Differences in Children's Reading Ability at Kindergarten Entry

Group Comparison	Effect size (*d*) of SES-based differences in reading ability
Low vs. Low-Middle	.40 (Small)
Low-Middle vs. Middle	.20 (Small)
Middle vs. Middle-High	.28 (Small)
Middle-High vs. High	.37 (Small)
Low vs. Middle	.62 (Medium)
Middle vs. High	.64 (Medium)
Low vs. High	1.11 (Large)

Note: SES = Socioeconomic Status

Table 5.

Means and Standard Deviations of Children's Gains in Reading Ability across the Kindergarten Year by Family SES and Kindergarten Teacher Quality

SES	Early/Elementary Education Graduate Degree *M* (*SD*)	No Graduate Degree *M* (*SD*)
Low SES	9.66 (6.25)	9.56 (6.40)[n.s.]
Low-Middle SES	11.12 (7.24)	10.52 (7.14) [n.s.]
Middle SES	11.72 (8.15)	11.01 (6.77) [n.s.]
Middle-High SES	11.16 (7.46)	11.91 (8.04) [n.s.]
High SES	12.03 (8.89)	12.87 (9.31) [n.s.]

Note: SES = Socioeconomic Status

n.s. = non-significant ($p < .05$) group differences

Table 6.

Means and Standard Deviations of Parent Social Support by Family SES

SES	Social Support *M* (*SD*)
Low SES	8.83 (2.75)
Low-Middle SES	9.53 (2.20)
Middle SES	9.61 (2.12)
Middle-High SES	9.66 (1.99)
High SES	9.58 (1.93)
Group Mean	9.44 (2.24)

Note: SES = Socioeconomic Status

Table 7.

Effect sizes (d) of SES-based differences in availability of parental social support

Group Comparison	Effect Size (*d*) of SES-based differences in availability of parental social support
Low vs. Low-Middle	.28 (Small)
Low-Middle vs. Middle	.04 (Small)
Middle vs. Middle-High	.02 (Small)
Middle-High vs. High	.04 (Small)
Low vs. Middle	.32 (Small)
Middle vs. High	.01 (Small)
Low vs. High	.32 (Small)

Note: SES = Socioeconomic Status

Table 8.

Effect Sizes of SES-based Differences in Reading Ability at Kindergarten and Eighth Grade

Group Comparison	Effect Size (*d*) of SES-based differences in reading ability (Kindergarten)	Effect size (*d*) of SES-based differences in reading ability (8th Grade)
Low vs. Low-Middle	.40 (Small)	.39 (Small)
Low-Middle vs. Middle	.20 (Small)	.26 (Small)
Middle vs. Middle-High	.28 (Small)	.38 (Small)
Middle-High vs. High	.37 (Small)	.42 (Small)
Low vs. Middle	.62 (Medium)	.73 (Medium)
Middle vs. High	.64 (Medium)	.81 (Large)
Low vs. High	1.11 (Large)	1.51 (Large)

Note: SES = Socioeconomic Status

Table 9.

Average Latent Class Probabilities For Most Likely Latent Class (Row) Membership by Latent Class (Column)

	Most Likely Latent Class Membership		
Latent Class	1	2	3
1	0.878	0.083	0.039
2	0.136	0.864	0.000
3	0.131	0.000	0.869

Table 10.

Model Estimated Means at Each Time Point by Latent Class Membership

	Data Collection Wave					
Latent Class	Kind. (Fall)	Kind. (Spring)	1st (Spring)	3rd (Spring)	5th (Spring)	8th (Spring)
Group 1 (60%)	52.335	52.259	52.183	52.107	52.031	51.955
Group 2 (29%)	39.193	40.524	41.856	43.188	44.52	45.852
Group 3 (11%)	61.983	61.671	61.359	60.047	57.735	55.423

Table 11.

Class Membership X SES/Social Support Crosstabulation.

	SES & Social Support Combined					
Latent Class	Low SES/Low SS	Low SES/High SS	High SES/Low SS	High SES/High SS	Total	χ^2
Group 1	62	164	64	219	509	
Group 2	45	115	44	124	328	
Group 3	14	24	10	33	81	
Total	121	303	118	376	918	$3.74^{n.s}$

Note: n.s. = non-significant ($p < .05$) Chi-Square Value

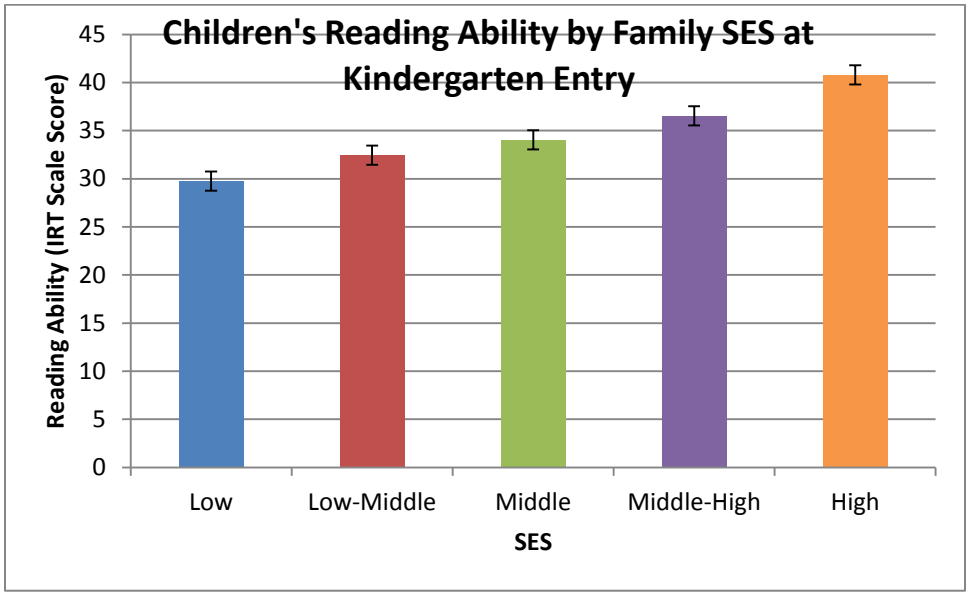

Figure 1.

Children's Reading Ability by Family SES at Kindergarten Entry

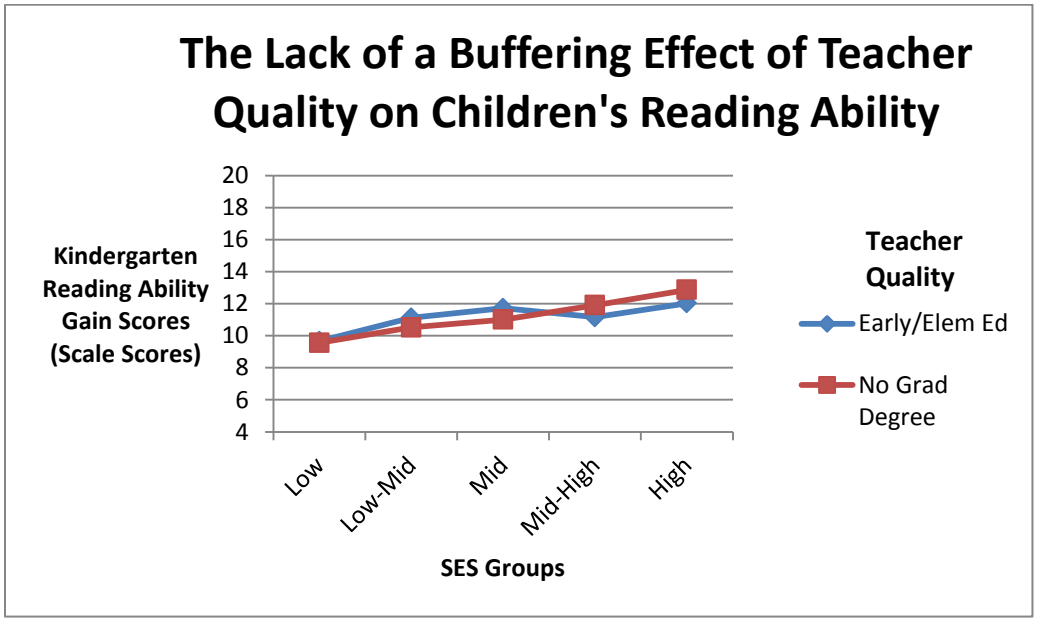

Figure 2. Gains in Children's Reading Ability across the Kindergarten Year by Family SES and Kindergarten Teacher Quality

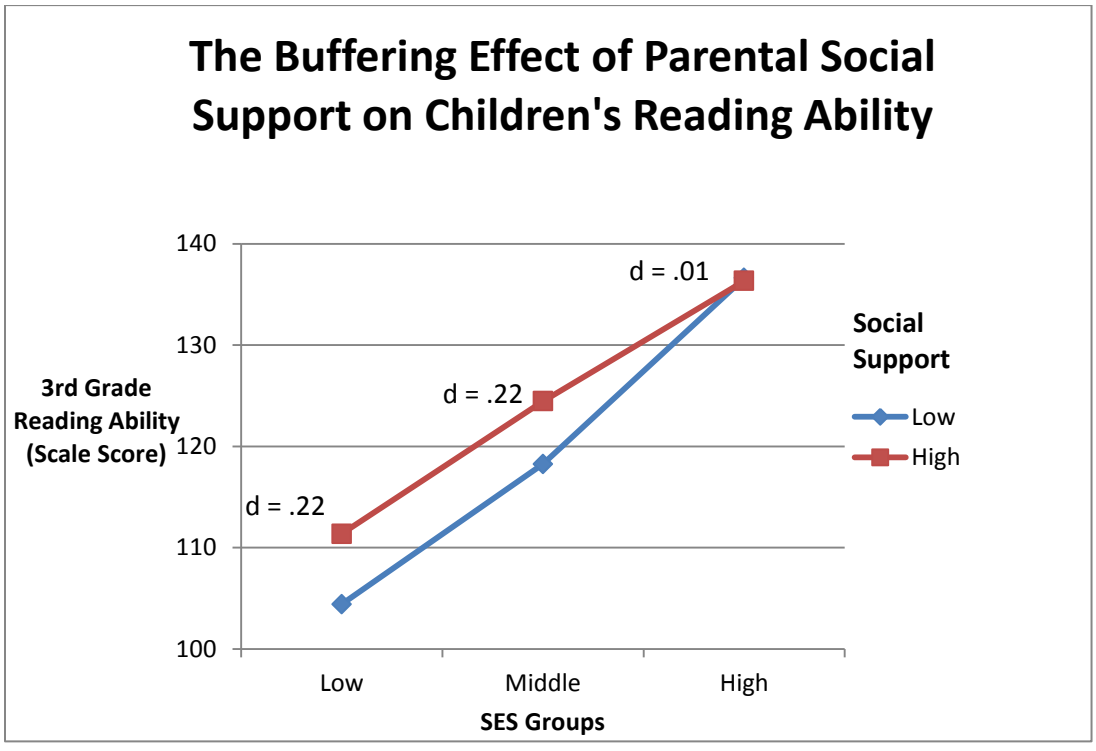

Figure 3. The Buffering Effect of Parental Social Support on Children's Reading Ability

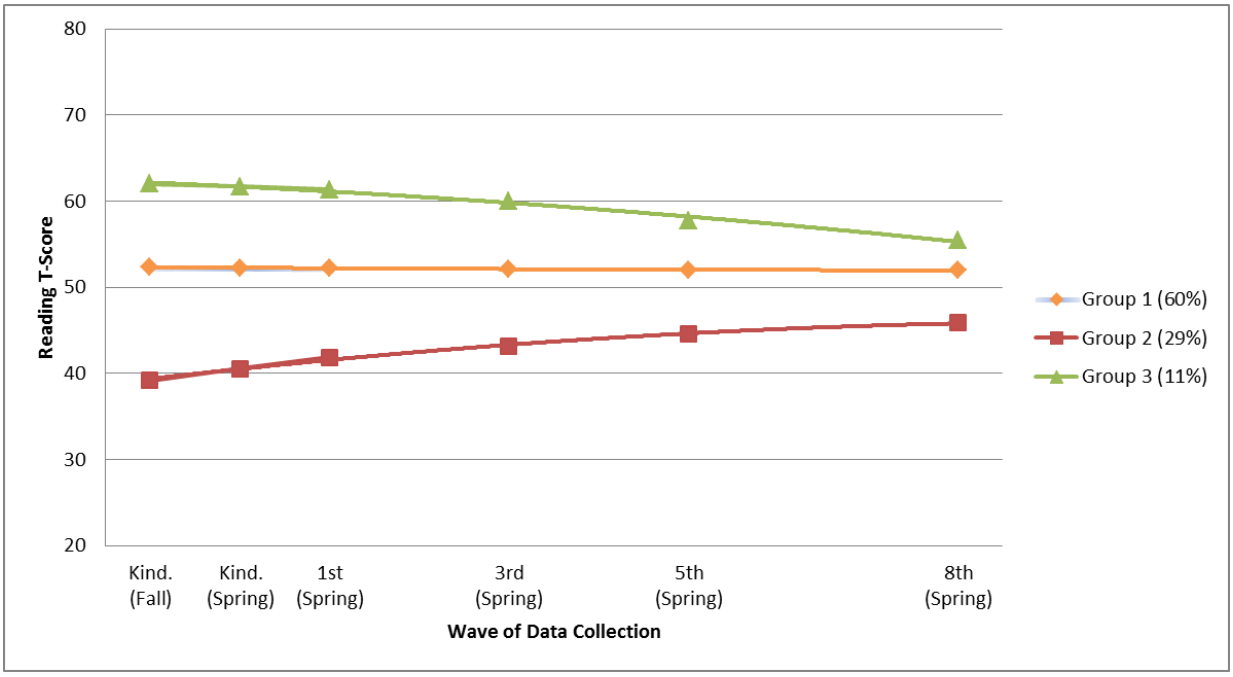

Figure 4. Model Estimated Average Growth Trajectories by Latent Class

APPENDIX A: PARENTAL SOCIAL SUPPORT SCALE

Third Grade Parent Questionnaire (Spring 2002-Round 4)

Now I am going to read some statements. Please tell me whether each statement is never true for you, sometimes true for you, or always true for you.

	NEVER TRUE	SOMETIMES TRUE	ALWAYS TRUE	REFUSED	DON'T KNOW
If I need to do an errand, I can easily find someone to watch (Child).	1	2	3	7	9
If I need a ride to get (Child) to the doctor, friends or family will help me	1	2	3	7	9
If (Child) is sick, friends or family will call or come by to check on how things are going	1	2	3	7	9
If (Child) is having problems at school, there is a friend, relative or neighbor I can talk it over with	1	2	3	7	9
If I have an emergency and need cash, family or friends will loan it to me	1	2	3	7	9
If I have troubles or need advice, I have someone I can talk to	1	2	3	7	9

APPENDIX B: IRB APPROVAL

WAYNE STATE UNIVERSITY

INSTITUTIONAL REVIEW BOARD
87 E. Canfield
Detroit, Michigan 48201
Phone: (313) 577-1628
FAX: (313) 993-7122
www.irb.wayne.edu

IRB MEMORANDUM

TO: Casey Dexter, Ph.D Student
Department of Psychology
Wayne State University
1098 Lakepointe Street
Grosse Pointe Park, MI 48230

FROM: Jo Anna Risk RN, MPH, CIP
Education Coordinator

DATE: December 12, 2012

RE: Family Socioeconomic Status and Children's Reading Ability: The Buffering Effect of Parental Social Support

Materials concerning the above-referenced research protocol were forwarded to Wayne State University (WSU)'s Institutional Review Board (IRB) Administration Office on December 12, 2012. It was forwarded to Dr. Scott Millis, Chair of the Behavioral IRB Committee who reviewed the information.

A determination was made that this project does not constitute human subject research according to the definition Codified in the Common Rule at 45 CFR 46.102 (d) (f) because the data you will be using in this study are publically available. Information you provided about the Early Childhood Longitudinal Study-Kindergarten Class (ECLS-K) data set clearly states that this data has been de-identified. In addition, no special permission is required for you to access the database, therefore, it is viewed as "publically available". As a result, this project does not prior require review and approval by the Wayne State University Institutional Review Board because you will not be collecting or receiving private, identifiable data for this study.

Please feel free to contact me if you have further questions.

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ABSTRACT

FAMILY SOCIOECONOMIC STATUS AND CHILDREN'S READING ABILITY: THE BUFFERING EFFECT OF PARENTAL SOCIAL SUPPORT

by

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August 2013

Advisor: Dr. Christopher Trentacosta

Major: Psychology (Cognitive, Developmental, Social)

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The purpose of this study was to better understand the protective effect that social support has on the development of reading in children from a range of SES backgrounds. Because other studies have suggested the importance of teacher quality on children's reading ability, this was also tested. This study utilized a sample taken from the public-use version of the Early Childhood Longitudinal Study-Kindergarten Cohort (ECLS-K), a large-scale, nationally representative sample of children attending kindergarten in the United States in the fall of the 1998-1999 academic year and their families, teachers, and schools. As expected, family SES and the availability of parental social support were important factors in predicting children's reading ability. More specifically, when measured at concurrent time points, social support was found to have a unique buffering effect on the relationship between SES and children's reading ability such that higher amounts of parental social support served as a protective factor for the development of children's reading ability for children who were in lower SES family environments. Teacher quality as operationalized in the present study did not have a significant impact on the relationship between SES and children's reading ability. Latent growth mixture modeling was used to predict probable class membership in typologies of reading trajectories

from the beginning of kindergarten through the end of eighth grade. Contrary to expectations, children's class membership in typology of reading trajectory over the school years was not found to vary by a combined measure of family SES and parental social support. The utility of conceptualizing parental social support as an integral contextual variable in the development of children's reading ability, especially those at-risk for reading delays, is discussed.

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Education:
2009 - Bachelor of Arts Albion College, Psychology and Religious Studies
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Manuscripts:
Stacks, A.M., Beeghly, M., Partridge, T., & **Dexter, C**. (2011). Effects of placement type on the language developmental trajectories of maltreated children from infancy to early childhood. *Child Maltreatment*, *16*, 287-299.

Dexter, C., & Stacks, A.M. (In Press). A preliminary investigation of the relationship between parenting, parent-child shared reading practices, and child development in low-income families. *Journal of Research in Childhood Education*.

Dexter, C., Wong, K., Stacks, A., Beeghly, M., & Barnett, D. (In Press). Parenting and attachment among low-income African American and Caucasian preschoolers. *Journal of Family Psychology.*

Dexter, C. (Under Review). The mediating role of the home environment on the relationship between parental socioeconomic status and child outcomes related to reading success.

Dexter, C., & Barnett, D. (In Writing). Using language risk and variation to predict reading ability in African American children: The mediating role of child behavior.

Selected Research Presentations:
Dexter, C.A., Wong, K., Stacks, A.M., Beeghly, M., & Barnett, D. *Parenting and attachment among low-income African American and Caucasian preschoolers*. Poster presented at biennial meeting of the Michigan Association for Infant Mental Health, Lansing, MI, May, 2013.

Dexter, C.A., & Barnett, D. *Using language risk and variation to predict reading ability in African American children: The mediating role of child behavior*. Poster presented at biennial meeting of the Society for Research on Child Development, Seattle, WA, April, 2013.

Dexter, C.A., Stacks, A.M., Vila, A., Singer, S., & Burke, M. *High quality parent-infant shared-reading: The importance of being responsive and engaging in teaching behaviors during play as a parent*. Poster presented at biennial meeting of World Association for Infant Mental Health, Cape Town, South Africa, April, 2012.

Dexter, C.A., Stacks, A.M. *The mediating role of the home environment in the relationship between socioeconomic status and child outcomes related to emergent literacy*. Poster presented at biennial meeting of World Association for Infant Mental Health, Cape Town, South Africa, April, 2012.