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THE EFFECT OF FAMILY CONTEXT VARIABLES ON LEARNING-RELATED SKILLS AND SUBSEQUENT ACADEMIC ACHIEVEMENT

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Abstract

The present study examined the contribution of various family context variables to the development of learning-related skills that are associated with positive academic outcomes. A substantial body of research underscores the strong association between certain nonacademic learning-related skills in young children and academic achievement over time. However, less is known about the potential for the family and home environment to foster or impede the development of these learning-related skills, particularly among at-risk learners with language delays and low socioeconomic status. A path model was used to test the hypothesis that learning-related skills measured in first grade would mediate the relationship between family contextual variables (parent demoralization and family stress, parent support for learning, and parent expectations and aspirations) measured at kindergarten and reading outcomes measured at second grade in a group of students oversampled for language and literacy skill deficits. This hypothesis was partially supported, with significant associations found between the parent demoralization and parent support for learning predictors and learning-related skills, which were, in turn, predictive of second grade literacy outcomes, even after controlling for baseline levels of literacy skill and learning-related skills. Implications for family-school partnerships and collaboration are discussed.

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CHAPTER 1

Problem Statement

Introduction

The family context and home environment play integral roles in child development. These factors have the potential to shape children's readiness for school and increase children's likelihood of experiencing academic success throughout their educational careers. Each family is situated in a different context, and every family has its own values, expectations, structure, and involvement with shaping their child's current and future academic experiences. Accordingly, while some family factors may contribute to resiliency and success in children, other factors may contribute to risk. Given the critical role that these factors play early in a child's life, it is logical that the family unit could function as a point of intervention to help foster the development of skills and behaviors that are important for academic success.

It is essential for school-based personnel to recognize the potential contributions and limitations of the family context when providing intervention to students in need of support. School psychologists are in an ideal position to provide leadership in establishing and facilitating effective home-school partnerships. Understanding the extent to which family and home variables affect children's early learning skills may have important implications for intervention development, particularly when collaboration and reinforcement at home are key strategies to ensuring intervention effectiveness. Therefore, the purpose of this research was to examine the contributions of family context and the home environment to the development of early learning-related skills that are essential for academic achievement. By providing support for student learning both at school and at home, school psychologists can encourage family involvement within a tiered model of service delivery such as Response to Intervention (RtI).

A hallmark of a tiered model of service delivery is preventing the onset of academic and behavioral problems in students. Indeed, there is an ever-increasing emphasis on prevention and early intervention as educational professionals and researchers alike seek to identify the best ways to foster skills that are important for school success as early as possible, with the first years of a child's schooling being a critical juncture for the acquisition of academic and socioemotional skills. An expanding body of research examines the relative contributions of early skills that are essential for school adjustment in children. Across studies, these skills and behaviors generally include elements of self-regulatory behavior, attention, and persistence that are conducive to children's successful functioning within a classroom, henceforth referred to as *learning-related skills*, in addition to oral language and emergent literacy skills. Learning-related skills are particularly important within an educational context because of their well-documented relationship with later academic achievement (e.g., Li-Grinning, Votruba-Drzal, Maldonado-Carreno, & Haas, 2010; McClelland, Acock, & Morrison, 2006). In other words, children with strong oral language and early literacy skills who also display strong attentional skills and an ability to regulate their behavior are most likely to experience academic success in school; this success will likely persist over time.

As researchers are increasingly taking an ecological systems perspective when examining children's school adjustment, it is widely acknowledged that multiple systems, both proximal and distal, interact to affect child development. More specifically, both theory and research have long suggested that the home environment plays an important role in children's socioemotional, behavioral, and academic outcomes. At a proximal level, the home learning environment is centered on the family as children's primary socialization unit and model for behavior. Further, parents serve as children's first teachers. Parents and primary caregivers provide opportunities

for children to learn language and acquire early skills that are critical in developing later academic competencies, and they set expectations for behavior and goals for the future. Parents and caregivers may also structure the home environment and engage in parenting practices that are conducive to positive behavioral, emotional, and academic outcomes for their children. In contrast, family stress and parent demoralization may undermine parents' endeavors to empower their children as learners. These stressors are even more pronounced among families experiencing economic hardship, compounding the potential for detrimental effects on children's development (Klebanov, Brooks-Gunn, & Duncan, 1994). As such, it is both important and necessary to examine the family contextual variables that contribute to learning-related skills (LRS) and achievement.

The Influence of the Family Context

The National Association of School Psychologists (NASP; 2006) advocates for the development of home-school partnerships, and the influence of the family on child development is generally accepted in the profession. Although not traditionally viewed as a role of the school psychologist, because of their unique positions as child advocates that work with both parents and teachers, school psychologists are situated to support effective parenting practices. Supporting effective parenting may promote the development of healthy behavior, social and emotional well-being, and a positive attitude toward school. Given that children spend a substantial portion of their time at school, school-based professionals share parents' investment in helping children to succeed and in teaching them important academic, social, and regulatory skills (NASP, 2006). Communication between home and school can lead to consistency of expectations across settings. Further, with a better understanding of parents' involvement and ability to support a child's learning in the home setting, school personnel can work to fill in any

gaps in academic skills or LRS that may exist between a child and his or her peers. For example, children from homes that are financially strained and whose parents possess limited time, resources, or knowledge of how to support their learning outside of school could benefit from the provision of additional instructional materials, resources, and even information about community supports. Finally, parents facing daily stressors and personal issues could benefit from consultation with educational professionals on how to continue to support their child's learning even in the presence of difficulties, and also on how to find and receive assistance for themselves from community-based providers when needed.

Related to the idea of home-school collaboration as an integral part of a successful school experience, families can also engage in literacy practices that support and extend what children are learning in the classroom. For instance, family practices related to joint book reading and exposure to cognitive stimulation are known to provide needed scaffolding and support for child literacy and language development (e.g., Bus, van Ijzendoorn, & Pellegrini, 1995). In addition, researchers have identified several specific family and home factors that have been empirically linked to student achievement, particularly in the area of literacy. These factors generally include parent aspirations and expectations, structure for learning, home affective environment, discipline, and parent involvement (Bennett, Weigel, & Martin, 2002; Christenson, Rounds, & Gorney, 1992; Fan & Chen, 2001; Snow, Barnes, Chandler, Goodman, & Hemphill, 1991).

Although research suggests that several of these family factors can influence child academic outcomes, fewer studies have examined the relationship between multiple dimensions of the family context (i.e., those family factors that contribute to risk as well as those that support student learning) and LRS as a precursor to academic achievement. In other words, it is

important to examine how different family and home dynamics affect LRS as a unique construct, as this set of early skills and associated behaviors fosters academic success over time.

Learning-Related Skills

LRS are those behaviors that are beneficial to promoting successful performance and adaptation to the demands of school (McClelland et al., 2006). Adaptive and school adjustment-related skills are sometimes referred to by synonymous terms such as *learning behaviors*, or *approaches to learning.* LRS represent the characteristics and behaviors of children as they successfully engage in learning activities and social interactions. In other words, LRS are the behavioral and social manifestation of various executive functioning skills (e.g., attention, inhibitory control) through classroom-based actions such as taking turns, cooperating with peers, following directions, and organizing materials (McClelland et al., 2006). LRS are multi-faceted and have been defined in many different ways. In general, dimensions of effortful control and behavioral self-regulation comprise LRS as a construct at the broadest level. Further, highly self-regulated children tend to have more developed social competence and appropriate interactions with peers and teachers (Cerda, Im, & Hughes, 2014). Accordingly, they are able to maximally attend to and benefit from instruction, as a multitude of research suggests that LRS have an association with achievement in school, including achievement over time (e.g., Bodovski & Farkas, 2007; Li-Grinning et al., 2010; McClelland et al., 2006; Sasser, Bierman, & Heinrichs, 2015).

The Present Study

Given the empirical evidence suggesting that LRS predict academic achievement, it is important to support the development of these skills in children early in their academic careers. Research also suggests that the family and home environment play a critical role in preparing

children for school, although it less clear how different aspects of the family context, when examined separately, have potential to foster or impede the development of LRS. Children who lack LRS early in school are at an increased risk for academic failure, and the gap between these children and their peers will continue to widen over time (Matthews, Kizzie, Rowley, & Cortina, 2010; McClelland et al., 2006). Risk for poor academic achievement is even greater among students with lower socioeconomic status who also face a host of other risk factors, including language delays.

In order to examine how children's early family and home context affects the development of LRS that are essential for later success in school, the following research questions will be addressed in this study:

1. Do home and family contextual variables measured in kindergarten (i.e., family stress and parent demoralization, parent academic expectations, parent support for learning) contribute to the development of LRS at first grade?
2. Do first grade LRS predict reading achievement in second grade?
3. Do first grade LRS fully mediate the relationship between family and home context variables measured at kindergarten (i.e., family stress and parent demoralization, parent academic expectations, parent support for learning) and second grade reading achievement, over and above the effects of prior reading achievement and prior LRS measured at kindergarten?

CHAPTER 2

Literature Review

The goal of the present research was to examine the contributions of family contextual variables on the development of LRS, and to determine the relationship between these LRS and later reading achievement among students at-risk for literacy problems. In order to better understand the importance of family factors in the development of LRS, it is vital to understand the significance of these skills as they relate to future academic outcomes. It is also necessary to examine not only the associations between family factors and LRS, but also how various family factors, or those associated with positive outcomes versus those associated with risk, contribute differentially to the development of LRS. With this understanding, school-based professionals can better identify ways to support families as they move through educational experiences with their children. Accordingly, the following section reviews the literature and existing knowledge regarding family and home contributions to LRS and achievement.

The present review begins with the examination of child-level variables, including the significance of LRS to academic achievement. There are different conceptual and empirical orientations to LRS in the literature; both composite and differentiated facets of LRS are reviewed and synthesized for relevance to the present study. The theorized mechanisms relating LRS to achievement in school are also examined. Next, the relationship between child-level variables (LRS) and family-level variables are explored. Family- and home-level factors include those that are associated with risk, such as parental depression, family stressors, and daily parenting hassles, as well as those factors that are associated with successful learning outcomes, such as parent support for learning, the provision of learning materials and resources in the home, and academic expectations and goals for the child. Students with language delays who are

living in poverty are presently as a highly at-risk population; the associations between low socioeconomic status, delayed language development, and various outcomes are reviewed and considered as the basis for the sample in the present study. Finally, the review concludes with presentation of research aims and hypotheses for the present study that have been informed by the literature and prior research.

Child-Level Variability: The Importance of Learning-Related Skills

Broadly defined, LRS are those early skills and behaviors that are most important for academic achievement in school. LRS relate to the demonstration of responsibility, self-regulation, organization, attentiveness, cooperation, and independence by young children (McClelland & Morrison, 2003). LRS may also be conceptualized as academic enablers, or nonacademic skills and behaviors that contribute to scholastic success (DiPerna & Elliott, 2002). An obstacle to studying LRS is the lack of an agreed-upon set of behaviors or competencies that comprise the broader construct. Similarly, the concept of LRS is reflected in several different bodies of research, including studies on approaches to learning, learning behaviors, learning styles, and academic enablers. In general, there is consensus that LRS include aspects of effortful control and behavioral self-regulation that allow children to interact socially and cooperatively with their peers and to attend to learning tasks (DiPerna & Elliott, 2002; McClelland & Morrison, 2003; McClelland et al., 2006). Further, some researchers suggest that LRS are derived from executive functioning (EF) skills, as McClelland et al. (2006) explain that LRS are the behavioral and social displays of EF skills as observed through actions such as following directions, appropriately using and organizing school materials, working cooperatively with others, and displaying persistence on difficult tasks. In the following sections, the broad

conceptualizations of LRS will be discussed first and then presented with their implications for successful adaptations to classroom demands.

Factorial and unified conceptualizations of LRS. At a broad level, LRS may be conceptualized as stemming from factors that allow a child to benefit from instruction to the greatest extent possible and to participate maximally in the classroom environment. The first of these factors involves *effortful control.* Effortful control (EC) is related to the ability to shift attention as necessary to attend to appropriate stimuli. Murray and Kochanska (2002) define EC as, "a temperamentally based ability to inhibit a dominant response and activate a subdominant response" (p. 503). Consequently, measures of EC often assess impulsivity on performance tasks (Cerda et al., 2014). EC relates to children's ability to direct their own actions meaningfully either by inhibition or control of emotional reactivity (Rueda, Posner, & Rothbart, 2005). For example, a child may inhibit himself or herself by not calling out during class instruction or not crying or having a tantrum when disappointed. EC is also sometimes conceptualized as a personality characteristic (Kochanska & Knaack, 2003) and is related to social development in terms of emotional control (Kochanska, Murray, & Harlan, 2000). Finally, some researchers conceptualize EC as a component of LRS (e.g., Cerda et al., 2014), whereas others consider EC to be an EF skill that underlies LRS as a whole (Neuenschwander, Röthlisberger, Cimelli, & Roebers, 2012).

Another broad construct related to LRS is *behavioral self-regulation,* or the application of executive functioning skills to behavior. More specifically, behavioral self-regulation involves the planning and control of behavior; it is considered to be a cornerstone of success in school (Paris & Newman, 1990). The Committee on Integrating the Science of Early Childhood Development (Shonkoff & Phillips, 2000) unequivocally upheld the importance of this skill,

stating that, “The growth of self-regulation is a cornerstone of early childhood development that cuts across all domains of behavior” (p. 3). Several studies further illustrate this importance. For example, Howse, Calkins, Anastopoulos, Keane and Shelton (2003) examined whether emotional regulation and behavioral self-regulation as measured in preschool predicted achievement in kindergarten. The authors found that lower levels of emotional and behavioral self-regulation were associated with lower scores on measures of math, literacy, and listening comprehension. Furthermore, behavioral self-regulation mediated the relationship between emotional regulation and the measures of achievement. Relatedly, self-regulation allows a child to selectively attend to appropriate strategies and techniques necessary to engage in cognitive tasks (Blair, 2002; NICHD Early Child Care Research Network [ECCRN], 2003), as self-regulatory learning-related behaviors involve self-control and planning. Highly regulated children are able to be thoughtful about the tasks in which they initiate and engage. Children with higher self-regulation are also attentive and demonstrate task persistence (Howse, Calkins, et al., 2003; Howse, Lange, Farran, & Boyles, 2003).

To speak further to the importance of children having strong self-regulatory skills, it has been found that children who display effortful control and behavioral self-regulation in the classroom tend to be more socially competent because they are able to use appropriate social behaviors, cognition, and affect in their interactions with peers and teachers. During a child’s early years of schooling, social competence may be demonstrated in appropriate group participation, taking turns, and following instructions (McClelland & Morrison, 2003). Socially competent behaviors stemming from strong LRS include sharing, organizing work, respecting other students, and participating in group activities. Social competence also has been found to be predictive of concurrent and future academic achievement (Malecki & Elliott, 2002). Some

researchers have suggested that social competence in and of itself is a component of LRS (Cerda et al., 2014) whereas others have implied that social competence is an outcome associated with having strong self-regulatory abilities.

DiPerna and Elliott (2002) also describe *academic enablers*, a concept analogous to LRS, as a construct related to academic competence along with traditional academic skills (reading, math, critical thinking). Academic enablers are defined as, "attitudes and behaviors that allow a student to participate in, and ultimately benefit from, academic instruction in the classroom" (DiPerna & Elliott, 2002, p. 294). Specific academic enablers identified include interpersonal skills, motivation, study skills, and engagement (DiPerna & Elliott, 1999). This conceptualization of learning behaviors shares the common theme of nonacademic skills relating to successful academic outcomes.

Overall, various studies of facets of LRS have contributed to the knowledge base of how early skills and behaviors prepare children to have positive academic outcomes. The aforementioned skills and behaviors are interrelated, and together they provide a comprehensive outlook on early competencies that contribute to school success. For instance, effortful control contributes to children's ability to regulate their behavior (i.e., to control impulses and emotional reactivity), which can impact the quality of their peer relationships and social competence. Similarly, a child who is socially competent will likely be less emotionally reactive and exhibit higher levels of behavioral self-regulation in general, which fosters the child's ability to attend to task demands and other classroom events that require sustained attention and effortful control. In other words, the multi-dimensional, fluid nature of LRS would best be conceptualized in a broad, unified manner. Together, these skills and behaviors form a strong foundation for positive school adjustment and academic achievement.

Validation of the LRS construct. The overall construct of LRS has been supported empirically in samples of preschool and early school-aged children. Using a confirmatory factor analysis, McClelland and Morrison (2003) identified the LRS construct based on teacher ratings of children's independence, responsibility, self-regulation, and ability to cooperate with peers among a sample of 3- and 4-year old children. Although several of these skills are important for supporting social competence, it is central to note that as a whole, LRS can be distinguished, conceptually and empirically, from interpersonal skills. Interpersonal skills can be characterized by positive social interactions with peers and include behaviors such as cooperating and playing well together, sharing, and respecting others, whereas LRS generally involve cooperation, independence, responsibility, and self-regulation, as exhibited through behaviors such as following directives, taking turns, and organizing materials (Cooper & Farran, 1988; Cooper & Farran, 1991; Lim, Rodger, & Brown, 2010; McClelland, Morrison, & Holmes, 2000; McClelland & Morrison, 2003).

Fantuzzo, Perry, and McDermott (2004) found evidence for a three-factor structure of learning behaviors in preschoolers: competence motivation, attention/persistence, and attitude toward learning. Competence motivation describes a child's drive to engage in learning activities and desire to succeed with these tasks; attention/persistence refers to a child's ability to appropriately attend to information and to endure despite challenges or difficulty; attitude toward learning describes a child's general approach to learning activities and interactions with peers and adults. This factor structure was obtained from a sample of low-income students. More recently, McDermott, Rikoon, Waterman, and Fantuzzo (2012) provided external validity evidence for learning behaviors in preschool predicting future academic proficiency and behavioral adjustment in a sample of Head Start students. Likewise, Rikoon, McDermott, and

Fantuzzo (2012) demonstrated external validity evidence with an older sample of students. These authors found that the factors of competence/motivation, persistence, cooperation, and emotional control were associated with reduced risk of academic difficulties and behavioral maladjustment.

LRS and predicting achievement. As researchers increasingly acknowledge the multi-faceted nature of LRS, studies examining how LRS relate to achievement are becoming more prevalent. For instance, in a study examining gender differences in literacy skills acquisition in kindergarten, Ready, LoGerfo, Burkam, and Lee (2005) found that approaches to learning (i.e., attentiveness, task persistence, eagerness to learn, independence, flexibility, and organization) accounted for a greater portion of the variance between males and females on literacy achievement scores than externalizing behaviors.

The positive association between LRS and academic achievement is demonstrated in a number of longitudinal studies, as well. Ladd and Dinella (2009) examined whether early school engagement predicted students' academic progress through eighth grade. More specifically, the study assessed behavioral and emotional engagement, which was defined as *cooperative participation* and *school liking* behaviors, respectively. The concept of behavioral engagement was defined through cooperative (versus resistant) participation in the classroom in the sense that students who possess this attribute could act in accordance with classroom rules, norms, and expectations. Students with higher cooperative participation were actively engaged in the classroom, compliant with teacher requests and directives, and they successfully used classroom materials. Behavioral engagement in Ladd and Dinella's (2009) study demonstrated similarities to the concept of LRS. However, the authors distinguish behavioral engagement and LRS by arguing that the idea of *cooperative versus resistant participation* represents a continuum of behaviors, ranging from full cooperation and engagement in the classroom to active resistance or

disengagement. Nonetheless, the authors' finding that those students who had higher levels of both emotional and behavioral engagement early in school experienced more academic success over time is compelling evidence that skills related to cooperation and participation (similar to LRS) are related to concurrent and future achievement.

Similarly, applying individual growth curve modeling to a large sample of data from the Early Childhood Longitudinal Study – Kindergarten Cohort (ECLS-K), Li-Grinning et al. (2010) found a positive association between approaches to learning in kindergarten and the trajectories of reading and math achievement through fifth grade. Those children with more positive approaches to learning, as measured by items examining students' persistence, attention, and emotion regulation, experienced more success in school, and this benefit persisted across time. Furthermore, the gains in achievement associated with better approaches to learning were evident among students of various socioeconomic statuses and ethnicities. In another study, student engagement, as measured by teacher-rated items assessing task persistence, attention, eagerness to learn, independence, flexibility, and organization, was found to be positively related to student gains in math achievement over time (Bodovski & Farkas, 2007).

McClelland et al. (2006) examined the impact of kindergarten learning behaviors, specifically those related to self-regulation and social competence, on the trajectories of math and reading skills through sixth grade. Using latent growth curve analyses, the authors found that those students with higher LRS in kindergarten fared better on academic tasks in reading and math than those with poorer LRS throughout school. The gap in achievement between those with better versus poorer LRS widened early on in elementary school (i.e., throughout second grade) and persisted through sixth grade. These findings lend credence to the vital role that LRS have in supporting academic achievement, including achievement over time.

Matthews et al. (2010) used a similar approach to examine the achievement gap between African American students and their White counterparts throughout fifth grade in a larger sample. Using a data from the Early Childhood Longitudinal Study–Kindergarten Cohort (ECLS-K) sample, the authors found that differences in LRS explained African American boys' literacy skill development throughout elementary school over and above the effects of socioeconomic variables, problem behaviors, and aspects of the home literacy environment. Interestingly, despite below average ratings of socioeconomic status and home learning environment, African American boys who were rated as one standard deviation above the mean on measures of LRS had achievement trajectories that resembled those of the highest achieving students.

As discussed previously, validity evidence for a measure assessing learning behaviors for both preschool (Preschool Learning Behaviors Scale; McDermott, Green, Francis, & Scott, 2000) and school-aged children (Learning Behaviors Scale; McDermott, Green, Francis, & Scott, 1999) has linked learning behaviors with academic achievement over time (McDermott et al., 2012; Rikoon et al., 2012). Other studies have found that learning behaviors account for a considerable portion of the variability in academic achievement (McDermott, 1984), with some studies suggesting that learning behaviors may even surpass intelligence with regard to predictive ability for future academic achievement (Schaefer & McDermott, 1999; Yen, Konold, & McDermott, 2004).

Overall, it is clear that LRS are of fundamental importance for academic success in school, particularly among at-risk students (Cerda et al., 2014, Fantuzzo et al., 2007; Li-Grinning et al., 2010; Matthews et al., 2010; McClelland et al., 2006; Sasser et al., 2015). LRS are nonacademic skills manifested through behaviors that demonstrate cooperation, social skills,

self-regulation, and attention in the classroom. There is a substantial amount of research examining various aspects of LRS, and consequently, there are numerous ways that LRS have been defined and studied in the literature. In general, most research related to LRS includes elements of effortful control, attention, persistence, flexible thinking, motivation, social competence, and behavioral self-regulation (Cerda et al., 2014; Howse, Calkins et al., 2003; Howse, Lange, et al., 2003; McClelland & Morrison, 2003; McDermott et al., 1999; McDermott et al., 2000; Neuenschwander et al., 2012). Results from several studies across various ethnic, age, and socioeconomic groups form a strong evidence base suggesting that LRS are predictive of later achievement (Cerda et al., 2014; Fantuzzo et al., 2004; Li-Grinning et al., 2010; Matthews et al., 2010; McClelland et al., 2006; McDermott et al., 2012; Rikoon et al., 2012; Sasser et al., 2015). Perhaps one of the most promising aspects of studying LRS is that these skills and behaviors are amenable to change. In other words, whereas traits such as cognitive ability are assumed to be relatively stable and inflexible, LRS are malleable and may improve through intervention efforts. From a service-provider perspective, it is desirable to gain an adequate understanding of the skills and behaviors that can be changed so that intervention efforts and resources can be appropriately allocated.

However, despite findings that link LRS to academic achievement trajectories, less attention is paid to the factors that precede the development of LRS. What early factors in a child's life may cause him or her to develop (or fail to develop) these skills that are so important to later achievement? Although children's family and home lives have the earliest and most proximal influence on their development, these factors are often overlooked as precursors to LRS. The potential contributions of family and home variables to LRS were explored in the present study.

Home-Level Variables: Parent Demoralization, Support for Learning, and Expectations

Beyond child-level factors, there is a multitude of research suggesting that family and home variables can affect school adjustment and academic achievement (e.g., Burchinal, Vernon-Feagans, Cox, & Key Family Life Project Investigators, 2008; Cummings & Davies, 1994; Okado, Bierman, & Welsh, 2014). These findings are consistent with several theoretical frameworks. At a broad level, according to ecological systems theory, several environmental systems affect child development (Bronfenbrenner, 1986). Of these systems, a *microsystem* has the most direct effect on development, as it is characterized by the groups of individuals most proximal to the child. The family unit can be conceptualized as a microsystem given its close relationship and involvement with the child from birth. Relatedly, social learning theory posits that individuals learn new patterns of behavior through observations of others' behaviors, attitudes, and the outcomes of the observed behaviors (Bandura, 1977). Taken together, ecological system and social learning theories provide a framework through which characteristics of the family and home environment can be understood as highly influential on child outcomes. The impact of family-level variables as they relate to child outcomes will be reviewed in the following section.

The impact of family stress and parent demoralization. Parent demoralization is a construct representing various factors that undermine parents' ability to support their children's learning to the greatest extent possible. These factors include parent internalizing symptoms (such as depression) and stressors related to poverty, single parenting, daily life hassles, and general stress related to childrearing. It is important to examine these family-level variables as they are associated with a multitude of child risk factors, including underachievement, school maladjustment, and socioemotional problems. Of particular relevance to the present study, the

presence of these risk factors may also undermine the development of the LRS that are positively related to academic achievement.

Poverty and single parenting. Parents are faced with a host of responsibilities when it comes to caring for their children and trying to maintain consistency with daily routines. Parenting responsibilities are compounded in low-income families, when families are faced with additional stressors including the increased likelihood of being a single-parent household and the associated financial burden, as well as reduced social support (Klebanov et al., 1994). According to the family process model (Conger et al., 1992), family financial pressures contribute to parent demoralization (i.e., parental depression), which has implications for the family structure and parenting skills, as economic hardship is associated with less maternal warmth. In other words, parents who experience an accumulation of stressors have more difficulty with being nurturing and involved parents, which takes a toll on their children's adjustment. Conversely, more positive, warm, and responsive patterns of parenting behavior are related to positive adjustment in children from an academic, social, and emotional standpoint (Smith, Landry, & Swank, 2000).

Maternal depression. Low-income households are disproportionately headed by single mothers who may face a variety of risk factors including less income, lower levels of education, and less social support (Klebanov et al., 1994). It is not surprising, then, that single mothers are at an increased risk for depressive symptoms. Indeed, prevalence rates for depression among low-income women are at least 25%, more than double the rate of depression in women in the general population. Furthermore, among low-income women with children, depression rates increase to between 40% and 60% (Knitzer, Theberge, & Johnson, 2008). Depression in fathers has received considerably less attention in the literature than maternal depression, and so it is difficult to draw conclusions about the impact on father's parenting behavior and child outcomes.

The relationship between maternal mental health symptoms and the presence of internalizing and externalizing behaviors is indeed stronger than the relationship between paternal psychopathology and these outcomes (Connell & Goodman, 2002), but there is still a dearth of research on the contributions of fathers to child development. When fathers are considered, they are often thought to have a moderating role between maternal depression and child outcomes such that maternal parenting may be more positive when fathers are present (e.g., Teti & Gelfand, 1991). For the purposes of the present study, maternal depression will be examined as an aspect of parent demoralization, given what is known about how mother-child interactions are affected.

Maternal depressive symptoms pose significant risk for the development of parenting difficulties, and in turn, problems with school adjustment and well-being among young children (Downey & Coyne, 1990; Goodman, 2007; Stein, Malmberg, Sylva, Barnes, & Leach, 2008; Wachs, Black, & Engle, 2009; Waylen & Stewart-Brown, 2010). Lovejoy, Graczyk, O'Hare, and Neuman, (2000) identified three overall areas in the literature to summarize the parenting difficulties that mothers may experience with their children when depressed: (1) low levels of engagement, (2) fewer positive social interactions, and (3) negative, irritable, and hostile behaviors. Moreover, depressive symptoms in mothers are related to less positive mother-child interactions, and in turn, these poor quality interactions are related to an increased likelihood of developing behavioral and emotional problems (Kiernan & Huerta, 2008). Relatedly, mothers who present with symptoms of depression are less sensitive in their interactions with their children (Hwa-Froelich, Cook, & Flick, 2008) and are less securely attached to their children (Campbell et al., 2004).

Depressive symptomatology is heterogeneous, with associated behaviors including negative mood, withdrawal, emotional insensitivity and unavailability, as well as hostility and irritability (Cummings & Davies, 1994). These symptoms may contribute to decreased self-efficacy and confidence in parenting ability. Furthermore, inadequate and inconsistent parenting in combination with a disorganized home environment may undermine the development of self-regulatory behaviors that are essential to the development of school readiness skills (Burchinal et al., 2008; Okado et al., 2014).

Children of depressed mothers are at an increased risk for the development of internalizing problems (Gladstone & Kaslow, 1995; Luoma et al., 2001), externalizing problems (Luoma et al., 2001), and socioemotional/adjustment problems (Cummings & Davies, 1994; Kam et al. 2011). Depressive symptoms in mothers have also been associated with children's attention difficulties (Cunningham & Boyle, 2002) and low social competence and adaptive functioning (Luoma et al., 2001). In addition, maternal depression has been shown to have an adverse effect on children's cognitive, motor, and language development (Petterson & Albers, 2001; Sohr-Preston & Scaramella, 2006), although it has been suggested that the impact of maternal depression on children's cognitive abilities is a function of the chronicity of depression and socioeconomic status (Kurstjens & Wolke, 2001). Still, others suggest that the presence of maternal depressive symptoms at any point poses risk for children's adjustment (e.g., Luoma et al., 2001).

Beyond parental depression alone, parent demoralization and family stress in general have been empirically linked with risk for underdeveloped LRS. For example, Okado et al. (2014) found that parent demoralization, defined by measures of parenting difficulties, stressors, and depression, was negatively related to children's school readiness. Similarly, parent

depression and parenting stress have been independently linked to child outcomes (including approaches to learning, emotion regulation, vocabulary) over time (Chazan-Cohen et al., 2009). In a study of risk factors for learning-related behavior problems, Morgan, Farkas, Hillemeier, and Maczuga (2009) suggested that poor quality parenting was related to a display of learning-related behavior problems.

In all, the deleterious effects of family stress and parent demoralization on child outcomes are clear based on previous research on maternal internalizing symptoms and stress arising from socioeconomic hardship, single parenting, and other family stressors. Parent demoralization and the presence of stressful family situations negatively affects school adjustment and academic achievement as a result of poor quality parent-child interactions, less involvement, consistency, and responsiveness to the child, thereby undermining the ability of the child to meet the demands of school to the greatest extent possible. Given the relevance of these parenting and the home factors to the development of early learning skills, it is essential for educational professionals to be prepared to support families in need of assistance with parenting practices and ways to foster a good home learning environment at school entry.

Parent Support for Learning

To the extent that family and home factors have potential to contribute risk to a child's school adjustment and achievement, home learning environment factors may also serve as important protective and supportive elements of a child's development. Indeed, there is ample evidence that parents can structure their home environment and engage in behaviors in such a manner that supports children's learning. The construct of *parent support for learning* can be conceptualized in many ways, though it is important to note that this construct is empirically distinct from parent demoralization (Okado et al., 2014). Generally, parent support for learning

involves elements of parent-child conversations and interactions characterized by warmth, responsiveness, and sensitivity, as well as joint book reading and the provision of cognitively stimulating materials in a well-structured home learning environment. In addition, parents' beliefs, perceptions, and feelings of self-efficacy about their own role in their child's school experiences can positively affect child outcomes (Drummond & Stipek, 2004; Hoover-Dempsey & Sandler, 1997) Parent involvement with their child's school is another important aspect of parent support for learning (Cheadle, 2008).

Numerous studies have suggested that the aforementioned variables related to parent support for learning mediate the relationship between risk factors and child outcomes. For example, Mistry, Benner, Biesanz, and Clark (2010) found that parental warmth, responsiveness, and the provision of literacy stimulation in the home partially mediated the relationship between risk factors (e.g., income status, marital status, public assistance, depression,) and school readiness outcomes (i.e., achievement, attention/behavior regulation, and problem behaviors). In another sample of rural low-income families, maternal use of language and learning activities was found to mediate the relationship between risk factors and children's cognitive development (Burchinal et al., 2008). The quality of the home environment and other family risk factors has been found to mediate the relationship between socioeconomic status and school readiness (Foster, Lambert, Abbott-Shim, McCarty, & Franze, 2005). Additionally, the relationship between financial status and achievement may be explained by a family's ability to invest in educational resources that contribute to a cognitively stimulating learning environment (Yeung, Linver, & Brooks-Gunn, 2002).

Other studies have taken a more direct approach in examining parent support for learning and child outcomes. Bradley, Corwyn, Burchinal, Pipes McAdoo, and Garcia Coll (2001)

examined the associations between parental responsiveness, stimulating learning materials and experiences, and the use of discipline strategies with children's motor development, social development, vocabulary, behavioral outcomes, and academic achievement among poor and non-poor students of various ethnic groups from birth to age 13 years. Learning stimulation, as measured on the Home Observation for Measurement of the Environment – Short Form (HOME-SF; Baker, Keck, Mott, & Quinlan, 1993) was associated with motor development, social development, language, and academic achievement among poor and non-poor White, Hispanic, and African American children at nearly every time point. Other studies have shown that parental responsiveness and availability of stimulating learning materials is positively associated with children's cognitive development early in life (Bradley et al., 1989; Linver, Brooks-Gunn, & Kohen, 2002). Furthermore, maternal sensitivity and the quality of the home environment has been found to predict changes in academic and cognitive functioning from ages 54 months to first grade (Downer & Pianta, 2006). The quality of the home environment has also been related to better attention abilities in children (Dilworth-Bart, Khurshid, & Lowe Vandell, 2007) and better emotion regulation and approaches to learning (Chazan-Cohen et al., 2009).

Early learning activities facilitated by parents such as book exposure and explicit instruction about reading and print words are associated with children's literacy and language skills (Gest, Freeman, Domitrovich, & Welsh, 2004; Sénéchal & LeFevre, 2002; Weigel, Martin, & Bennett, 2007). Further, Gest et al. (2004) found evidence of a moderating role of parent discipline practices when examining the relationship between shared book reading and comprehension skills prior to kindergarten; among parents who used nondirective reasoning, or a dialogue characterized by verbal elaboration and give-and-take when disciplining their child, shared book reading was positively related to comprehension skills.

Beyond interactive learning experiences, parents' beliefs and sense of self-efficacy concerning the importance of their role in their child's education is another important element of parent support for learning. When parents believe they are essential contributors to their child's success in school, they act in such a manner to reflect these beliefs (Drummond & Stipek, 2004, Hoover-Dempsey & Sandler, 1997). Additionally, parent participation in school activities is an essential component of their investment in their child's education. Cheadle (2008) found that "concerted cultivation" (Lareau, 2003), a concept operationalized in his study through (1) parent participation in school activities (e.g., school events, parent-teacher meetings), (2) child participation in organized learning activities, and (3) the provision of material learning resources, was related to child skills when he/she entered kindergarten as well as math and reading skills over time.

In sum, ample evidence suggests that the practices that parents engage in with their children, their participation in their child's schooling, and their beliefs about their ability to support their child's learning contribute to the development of LRS. By nature, shared home literacy experiences scaffold children's early school-related skills by fostering independence, cooperation, and self-regulation in addition to building fundamental literacy knowledge. Activities such as joint reading also stimulate cognitive and linguistic skills and pique children's interest in literacy activities. Further, interest in school activities will likely foster motivation to learn, which may lead to more positive and prosocial behaviors in the classroom and subsequent academic success.

It is not only important to examine that structure of the home learning environment and the behaviors in which parents engage, but it is also necessary to consider expectations as a component of parent support for learning. In other words, knowledge about the values, beliefs,

and expectations that parents have for their children's future can help to form a more complete view of a child's home life. Due consideration must be made to all aspects of parents' contributions to learning: their well-being, their behaviors at home, and their expectations and views about their child's education.

Parent Expectations and Aspirations

Parent expectations refer to parents' current or future goals for the children's academic performance. Expectations differ from parent support for learning as a construct because they are not behaviors per se. Rather, parent expectations are aspirations and goals that a parent may hold for a child's future. Parent expectations are one of several family factors that affect student achievement and may serve as targets for intervention to improve child outcomes in school (Christenson et al., 1992).

In line with social cognitive theory, the mechanism relating parent aspirations and expectations to academic achievement is related to children's self-efficacy (Bandura 1986, 1995). When parents have high expectations for their child's success in school, those high expectations positively affect children's academic self-efficacy and appraisal of their own abilities in school. Children with higher self-efficacy are more likely to set high standards for themselves and be less vulnerable to feelings of inadequacy toward school. They are also less likely to fall victim to negative peer influences that could hinder their school success (Bandura, Barbaranelli, Caprara, & Pastorelli, 1996).

Research has indicated that parent expectations and aspirations are associated with academic achievement, as children of parents with higher academic expectations have better academic outcomes (Alexander, Entwisle, & Bedinger, 1994; Entwisle & Anderson, 1990; Galper, Wigfield, & Seefeldt, 1997; Mantzicopoulos, 1997; Parsons, Adler, & Kaczala, 1982).

In a meta-analysis, Fan and Chen (2001) found a small to moderate relationship between parental involvement in general (defined by the authors as including the dimensions of educational aspirations/expectations, communication with children about school, parental supervision/home structure related to school matters, parental participation in school activities, and other general parental involvement) and academic achievement across the quantitative literature, with parental involvement accounting for approximately 28% of the variance in the outcome measures. Upon further breakdown analysis of the parent involvement variable, they found that parental aspirations/expectations for their children's success had the strongest relationship with academic achievement as compared to other dimensions of parent involvement such as communication, supervision, or participation.

Trivette and Anderson (1995) examined the relationship between various aspects of parent involvement (i.e., parental aspirations/expectations, parent-child communication, home structure, and parental participation in school activities) among a nationally representative sample of eighth-grade students. Using a structural equation modeling (SEM) latent variable analysis, the authors found that parental aspirations/expectations had the strongest effect on academic achievement in eighth grade as compared to the other components. More recently, Zhang, Haddad, Torres, and Chen (2011) found a reciprocal relationship between parents' expectations and adolescents' expectations for themselves and adolescent academic achievement, such that students' expectations for themselves and parent expectations measured at eighth grade predicted twelfth-grade achievement, and eighth-grade achievement also predicted both students' and parents' expectations at twelfth grade. Peng and Wright (1994) attributed the achievement gap between Asian American students and students of other ethnic backgrounds to differences in parental expectations for achievement, with Asian American parents expecting that their children

would spend more years in school as compared to parents of other ethnic groups. Interestingly, Asian American parents did not necessarily help their children with schoolwork any more than parents in other racial groups; it was only their expectations about their children that differed.

Studies of parent expectations and aspirations are varied in their approaches to examining the contributions of this construct to achievement. Furthermore, these studies examine the direct relationship between parent expectations and achievement rather than a more indirect relationship with expectations influencing achievement through mediating variables; if these mediating variables may play an important part in explaining child achievement, it will be important to explicitly study them. In addition, several of these studies examine parent expectations with older students, but less attention is paid to parents' early expectations for their children from a young age. From an intervention standpoint, it is important to consider parent expectations of young children, particularly those who are at-risk for the development of academic difficulties, because of the association between these expectations and a child's academic performance. Although school-based personnel cannot directly influence the expectations and future goals that parents have for their children, they can encourage parents to actively consider their expectations and to set high standards that are reasonable and congruent with their family's values to guide their approach to their child's educational experience.

Language-Delayed Children: An At-Risk Sample

Beyond risk factors that may exist in the home environment, individual-level differences with regard to language development may place children at increased risk for negative outcomes. More specifically, a number of studies converge on the conclusion that children with delays in language development are a particularly at-risk population for a host of academic and social-

emotional challenges, and these challenges will persist over time (Johnson et al., 1999; Nelson, Welsh, Trup, & Greenberg, 2011; Weizman & Snow, 2001).

Etiology of language delays among low-income children. Numerous studies suggest that children living in poverty experience language delays at a higher prevalence rate than their non-economically disadvantaged peers (Hart & Risley, 1995; Qi, Kaiser, Milan, & Hancock, 2006; Whitehurst, 1997). The mechanisms by which delays in language development occur are complex and multi-faceted. From a dynamic systems model perspective, it has been theorized that differential language development includes aspects of individual child characteristics, information processing, knowledge, and interactions with social-emotional processes (Nelson, Welsh, Camarata, Heimann, & Tjus, 2001). Additionally, a major component of language development is vocabulary acquisition. Studies have indicated that there is substantial variability in the amount of language input that children receive as a function of their socioeconomic status, with children from low-income families hearing significantly fewer words as compared to middle- and upper-class children (Hart & Risley, 1995). The amount of words that children are exposed to over a period of time is positively associated with the size of their vocabularies, with researchers suggesting that parent speech significantly affects children's vocabulary growth (Huttenlocher, Haight, Bryk, Seltzer, & Lyons, 1991).

Beyond simply the number of words heard, research also suggests that the quality of speech input also has an important effect on vocabulary and language development (Hart & Risley, 1995). In other words, children who hear more sophisticated or low-frequency words tend to have more developed language skills and better vocabulary performance over time (Weizman & Snow, 2001). Hart and Risley (1995) also found that the function of speech varies by socioeconomic status, with lower income families being more directive of child behavior in

their speech, and less likely to initiate and maintain conversation with their children. Low-income families are also less likely to participate in cognitively stimulating activities, including those supporting literacy skill development such as joint book reading and going to the library (Evans, 2004).

The impact of language delays. Numerous studies have demonstrated a link between delayed language and academic achievement over time, even into adolescence (Johnson et al., 1999; Stothard, Snowling, Bishop, Chipchase, & Kaplan, 1998; Tomblin et al., 1997). For example, Nelson et al. (2011) found that a majority of children living in poverty were delayed in their language development, and these delays held across racial and ethnic groups. Furthermore, these researchers investigated how the severity of language delays relate to a host of pre-academic and social-emotional skills related to school readiness, including basic numeracy skills, print knowledge, phonological processing, and emotion recognition. Language skills in this study were measured on assessments of syntax understanding, syntax production, and vocabulary. The authors found that the severity of the language delays systematically varied with all outcome variables. In other words, the more severe the language delay, the poorer the child fared on a series of academic and socioemotional outcomes.

In longitudinal studies with larger samples, the development of later learning difficulties are observed to a greater extent among individuals who were language delayed in their preschool years (Catts, Fey, Tomblin, & Zhang, 2002; Stothard et al., 1998; Tomblin et al., 1997). Furthermore, students with both nonverbal and language deficits, as compared to language deficits alone, are most at-risk for persistent learning difficulties (Catts et al., 2002) including difficulties into adolescence (Stothard et al., 1998).

Overall, children with language delays living in poverty are a highly at-risk population for negative outcomes. These outcomes are not limited to continued language difficulties; these children may also face a poorer outlook for academic achievement and social-emotional skills deficits. With some studies suggesting that a majority of the children living in poverty have delays in their language development, it is essential to examine the outcomes associated with these delays to fully understand how intervention efforts, including those efforts that target the family and home environment, may work differently with this at-risk low-income population.

Summary

To conclude, parents' expectations, along with their behaviors to support student learning can contribute to the development of LRS essential to later academic achievement. Conversely, family stress and parent demoralization may undermine the development of LRS and consequently place a child at-risk for underachievement. The present research examined how this continuum of family and home variables influence the LRS that may mediate the relationship between the characteristics of a child's early home life and literacy skills over time. These research questions were examined among an at-risk sample of low-income children who presented with language delays at kindergarten entry.

Present Study

Research suggests that LRS are positively associated with academic outcomes. This association has been observed among diverse populations of students, including those at an increased risk for difficulty in school. Furthermore, the positive impact of LRS on achievement persists, with evidence suggesting that students with strong LRS will outperform their peers with poorer LRS over time. However, research examining the contributing factors to the development of LRS is lacking. For young children, the family and home context exerts the most influence on their development. Some aspects of this context may enrich children's development of essential learning skills, whereas others may impede this development. Parent support for learning (as exhibited through parent behaviors and structuring of the home learning environment) and parent expectations and aspirations have been linked to more positive academic outcomes. Conversely, parent demoralization and family stressors are associated with poorer academic performance.

Supporting children and families at home and at school is an integral part of school psychologists' collaborative and consultative role. Therefore, with an understanding of how elements of children's family and home lives provide them with the tools to be successful learners, school psychologists can provide the necessary support to families to foster these skills and behaviors in their children. The goal of this study was to examine the separate contributions of each of the family contextual variables (as measured in kindergarten) to LRS (as measured in first grade), and to then determine if these LRS predict future reading outcomes (as measured in second grade). These relationships were examined in an at-risk sample of students who were oversampled for language and literacy difficulty and were economically disadvantaged.

The present study was guided by three primary questions. First, do home and family contextual variables measured in kindergarten (i.e., parent demoralization and family stress,

academic expectations, parent support for learning) contribute to the development of LRS at first grade? In accordance with the research suggesting that family stress and parent demoralization have adverse effects on child outcomes, it was expected that there would be a negative association between parent demoralization at kindergarten and LRS at first grade. Conversely, it was expected that there would be a positive association between parent support for learning and parent expectations at kindergarten and LRS at first grade given the research linking these constructs to academic success.

Second, does LRS measured at first grade predict reading achievement in second grade? It was hypothesized that first grade LRS would predict second grade reading outcomes. This hypothesis was guided by the numerous studies linking LRS to academic achievement among at-risk students across various age and ethnic samples, including those longitudinal studies demonstrating that LRS predict achievement over time. This assemblage of nonacademic learning skills and behaviors generally includes elements of attention, effortful control, persistence, motivation, flexible thinking, and attitude toward learning; these attributes may serve as protective factors that enhance the likelihood of academic success.

Finally, does first grade LRS mediate the relationship between family and home context variables (i.e., parent demoralization and family stress, parent support for learning, parent expectations) and second grade reading achievement, over and above the effects of prior reading achievement and prior LRS measured at kindergarten? A model was hypothesized in which LRS measured in first grade acts as a mediator between the family and home contextual variables measured at kindergarten (i.e., parent demoralization and family stress, parent support for learning, parent expectations) and reading outcomes in second grade. Lower ratings of parent demoralization and family stress, higher ratings of parent support for learning, and higher ratings

of parent expectations were expected to be associated with better LRS, which was, in turn, expected to be associated with better reading outcomes in second grade, controlling for prior reading achievement and prior LRS in kindergarten (see Figure 1).

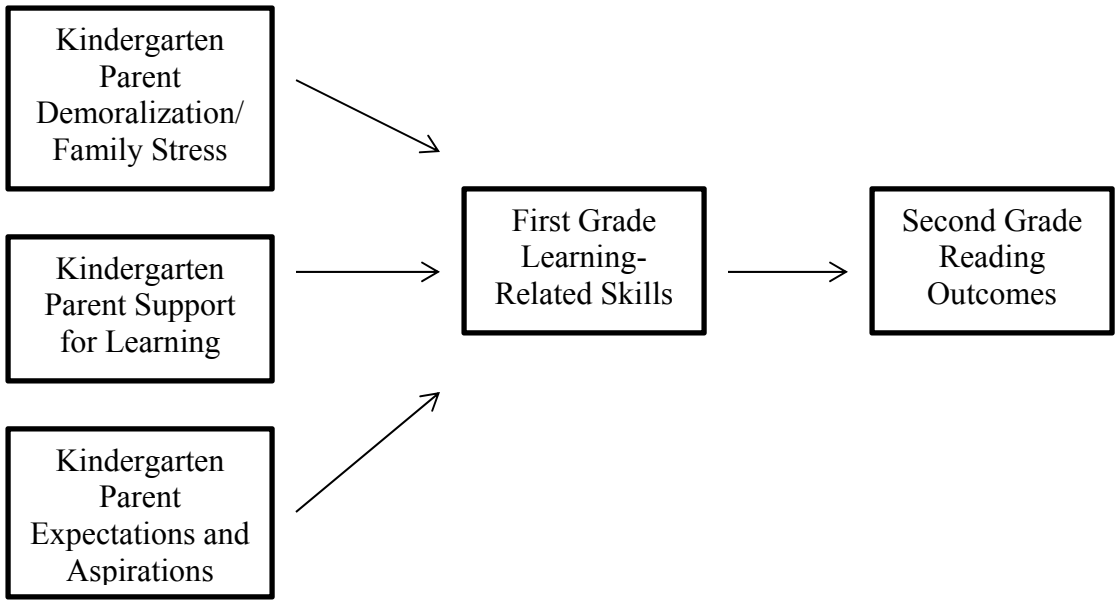

Figure 1. Hypothesized path model with first grade LRS as a mediator between kindergarten parent demoralization, support for learning, and expectations and aspirations and second grade reading outcomes, controlling for prior achievement and prior LRS.

CHAPTER 3

Method

Participants

Participants in this study were drawn from the control sample of the Focus on Learning (FoL) project, a larger intervention study examining the effectiveness of a curriculum-based home visit reading intervention aimed at improving children's oral language, early literacy skills, and approaches to learning. Participating schools represented three socioeconomically disadvantaged and racially diverse areas of Pennsylvania. Participants were oversampled for deficits in language and emergent literacy skills at school entry. Specifically, they qualified to participate in the study if they scored one standard deviation below the national mean on the Expressive One Word Vocabulary test or the Dynamic Indicators of Early Basic Literacy Skills (DIBELS). Children with physical or sensory handicaps, limited English proficiency, or an individualized education program (IEP) prior to kindergarten entry were not included in the sample.

Participants were randomly assigned to intervention and control conditions. A total of 137 participants (80 boys and 57 girls) comprised the control sample of the FoL Project and were used in the analyses for the present research. Participants in the sample identified as European American (78.1%), African American (10.2%), Latino (22.6%), and Asian American (<1%) (*Note*: participants could select multiple races). Student data was available from kindergarten, first grade, and second grade. The majority of the primary caregivers in the sample earned a high school diploma or less; additional demographic information about caregivers is presented in Table 1.

Table 1

Demographic Characteristics of Primary Caregivers in the Sample

Demographic Variable	*N*	Percent of Sample
Highest educational level attained by primary caregiver		
Less than 7th grade	1	0.7
7th, 8th, or 9th grade	6	3.3
10th or 11th grade	19	13.9
GED	10	7.3
High school diploma	56	40.9
Some technical school or college	12	8.8
Associates degree or technical certificate	24	17.5
Bachelors degree	4	2.9
Higher than Bachelors degree	5	3.6
Marital status		
Married	64	46.7
Living with partner	28	20.4
Single	45	32.8
Employment status		
Working	78	56.9
Unemployed	59	43.1

Note. Total $N = 137$.

Procedures

Potential participating families were informed about the study through a flyer distributed to kindergarten students in the beginning of the year at the participating schools. The flyer described the nature of the study as a parent-focused intervention to improve student learning. Unless they declined, parents were contacted by telephone to ask if they would be willing to let their child participate in a developmental assessment to determine if the child would be eligible for participation in the study. For those children whose families consented, trained research staff administered the aforementioned assessments (Expressive One Word Vocabulary test, DIBELS) on an individual basis. If students met eligibility criteria (i.e., scoring at least one standard deviation below the mean on these assessments), their parents were again contacted and informed that they qualified for the study. In-home visits were scheduled for families who

consented to participate in order to provide more information about the study and the random assignment process. Consented families also completed a pre-intervention parent assessment at the time of the fall child assessment. See Figure 2 for a summary of recruitment and response rates.

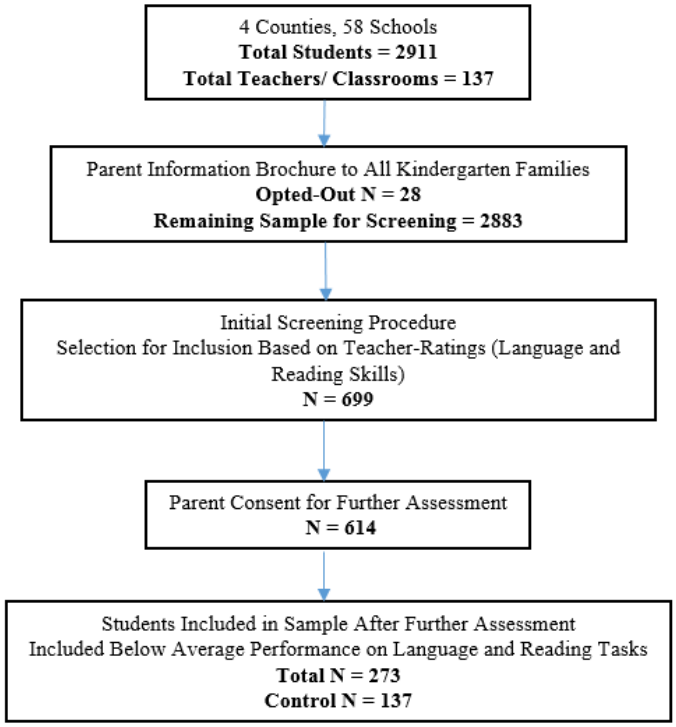

Figure 2. Recruitment and Response to Participate for Focus on Learning Project.

Child measures were collected during the fall and spring of kindergarten, as well as in the spring of first and second grades. Trained research assistants administered the child assessments on an individual basis during "pull-out" sessions at school. Research assistants obtained informed consent and distributed and collected parent and teacher measures. The parent, teacher, and child measures of relevance to this research were collected in the fall of kindergarten, spring of first grade, and spring of second grade, respectively (see Table 2). All research procedures were approved by the Institutional Review Board (IRB) at the Pennsylvania State University and follow the ethical guidelines set forth by the American Psychological Association (APA).

Table 2

Data Source and Time of Measurement for All Individual Measures

Data Source	Time of Measurement		
	Fall of Kindergarten	Spring of First Grade	Spring of Second Grade
Parent Measures			
CES Depression Scale	X		
Parenting Daily Hassles Questionnaire	X		
Family Stress Questionnaire	X		
Academic Expectations and Aspirations	X		
Parent Reading Belief Inventory	X		
Teacher Measures			
Parent-Teacher Involvement Questionnaire	X		
Learning Behaviors Scale	X	X	
Child Measures			
Letter-Word Identification	X		X
TOWRE Sight Word Efficiency	X		X
TOWRE Phonemic Decoding Efficiency	X		X
Dolch Sight Words			X

Note. Data collected was collected during both the fall and spring of kindergarten. Only parent data from the fall of kindergarten was used in this study to assess parent, family, and home characteristics at school entry.

Measures

Literacy skills. Four measures were used to examine literacy outcomes in second grade: (1) the Letter-Word Identification subtest from the Woodcock-Johnson Tests of Achievement – III (WJ-III; Woodcock, McGrew, & Mather, 2001), (2) the sight word efficiency (SWE) subtest of the Test of Word Reading Efficiency (TOWRE; Torgesen, Wagner, & Rashotte, 1999), (3) the phonemic decoding efficiency (PDE) subset of the TOWRE (Torgesen et al., 1999), and (4) the Dolch Sight Words (http://www.dolchsightwords.org/). On the Letter-Word Identification subtest, participants were asked to name letters and read words aloud from a list ($\alpha = .939$). On the TOWRE SWE subtest, participants were asked to read printed words aloud within a specified time. On the TOWRE PDE, participants were asked to decode printed nonwords aloud within a

specified time. Finally, participants were asked to read Dolch Sight Words, lists of commonly used English words.

All four measures are nationally standardized and are frequently used to assess print knowledge, sight-word reading, decoding, speed, and accuracy. A mean composite of the Letter-Word identification standard score, TOWRE SWE total score, TOWRE PDE total score, and percent correct of the Dolch Sight Words was used to examine literacy skills at second grade.

Parent demoralization and family stress. Three subscales examined parent and family stress and demoralization; this information was collected during the fall of kindergarten (see Appendix A). The Center for Epidemiological Studies (CES) Depression Scale (Radloff, 1977) was used to examine mothers' symptoms of depression. Mothers in the sample provided responses to 20 items assessing the frequency of their depressive symptoms in the last week on a 4-point scale, ranging from 0 (*rarely, a day or less)* to 3 (*almost all the time, 5 to 7 days*; α = .890).

The Parenting Daily Hassles Questionnaire (Crnic & Greenberg, 1990) provided information related to daily family hassles and stressful events. Parents responded to 12 items assessing how often various hassles (e.g., cleaning up messes, mealtime difficulties, childcare stressors, scheduling difficulties, bedtime resistance, running errands, child arguments, struggling with punctuality) occur in their family. Responses were provided on a 4-point scale, ranging from 1 (*rarely*) to 4 (*almost always*; α = .75).

A series of questions related to family stress (Family Stress Questionnaire) was also included to determine whether various stressful events (e.g., moving, medical problems, death in the family, financial and legal problems, drug or alcohol abuse, loss of a job, problems in the workplace, etc.) occurred within the family over the last year. Parents provided a yes or no

response to 12 items of this nature. A total score was obtained by taking the sum of all items endorsed as "yes".

A composite representing *parent demoralization and family stress* measured at kindergarten was created from the CES Depression Scale mean score, Parenting Daily Hassles Questionnaire total score, and Family Stress Questionnaire total score. These scales were averaged and standardized to create a composite.

Parent support for learning. Parent behaviors that support their child's learning and school adjustment were assessed during the fall of kindergarten on the following measures: portions of the Parent Reading Belief Inventory (parent ratings) and the Parent-Teacher Involvement Scale (teacher ratings; see Appendix B).

The Parent Reading Belief Inventory (DeBaryshe, 1995; DeBaryshe & Binder, 1994), measures parent support for learning on a number of different dimensions. Dimensions of interest in the present study included parents' beliefs about the importance of reading instruction in the home (Reading Instruction subscale, 4 items; $\alpha = .624$) and parents' beliefs about the knowledge base afforded to children through reading (Knowledge Base subscale, 5 items; $\alpha = .796$). On these subscales, parents were asked to indicate how much they agree or disagree with a series of statements relating to the aforementioned dimensions of reading beliefs on 4-point scale, ranging from 1 (*strongly disagree*) to 4 (*strongly agree*; $\alpha = .950$). Mean scores were obtained for both the Knowledge Base and Reading Instruction subscales.

The Parent-Teacher Involvement Questionnaire assessed parent involvement in their child's education and schooling from the perspective of the teacher. Teachers were asked to indicate the extent to which several items apply to a given child's family-school involvement scenario (e.g., parent interest in getting to know the teacher, parent goals for the child's

education, the value the parents place on education) on a 9-item, 5-point scale, ranging from 0 (*never/not at all)* to 4 (*very often*/*a great deal;* $\alpha = .935$).

A composite representing *parent support for learning* at kindergarten was created from the mean of scores the Reading Instruction and Knowledge Base subscales of the Parent Reading Belief Inventory and the Parent-Teacher Involvement scale. Scores on these scales were averaged and standardized to create a composite.

Parent expectations and aspirations. Parent expectations and aspirations about their child's educational attainment and academic achievement was examined with selected items from the Developmental History Interview (Conduct Problems Prevention Research Group, 1991) as measured in the fall of kindergarten (see Appendix C). These items assessed parent expectations for how far they believe their child will go in school (i.e., less than first grade to beyond four years of college), what grades parents anticipate their child receiving in school, and how likely it is that the child will be successful in adulthood. Given the different nature of the scales of these items, the first two items were re-coded into ordinal categories. A mean score of these items was then obtained and used to represent parent expectations and aspirations in the model.

Child learning-related skills. Child learning-related skills were assessed during the spring of first grade with selected items from the Learning Behaviors Scale (McDermott, Green, Francis, & Scott, 1999; see Appendix D). The Learning Behaviors Scale (LBS) is a teacher-report form that is used to obtain summative teacher input on a variety of learning behaviors that have been empirically linked to strong academic performance. The LBS has been found to have a four-factor structure that examines student behaviors that reflect competence/motivation; attitude toward learning, attention/persistence, and strategy/flexibility (McDermott et al., 1999). The

construct validity of the LBS has been independently studied and found to be a valid and reliable measure for examining student learning behaviors, including for research purposes (Worrell, Vandiver, & Watkins, 2001) and with samples of low-income children (Fantuzzo et al., 2004). The LBS includes items that assess a teacher's perspective of a child's attention, persistence, effort, cooperation, and flexibility in school. Teachers responded to items examining how frequently various statements apply to the specific child. Responses to 13 items were provided on a 3-point scale, ranging from 0 (*does not apply*) to 2 (*most often applies*) ($\alpha = .901$). It is noted that only 13 selected items from the original LRS were used in the present study. The total score from these items on the LBS represented child learning-related skills in the model.

Covariates. Two control variables were included in the model: (1) kindergarten LRS, as measured by teacher ratings on the Learning Behaviors Scale during the fall of kindergarten, and (2) kindergarten literacy skills, as measured by a mean composite of the TOWRE SWE total score, TOWRE PDE total score, and Letter-Word Identification standard score during the fall of kindergarten. Although Sight Word Reading was included in the second grade literacy composite, this measure was not available at kindergarten and could not be included in the creation of the kindergarten literacy skill composite. These control variables were included in the model to ensure that baseline differences in LRS and literacy skills were accounted for, thereby preventing erroneous associations between the kindergarten predictors, first grade LRS, and second grade reading outcomes. Bivariate correlations between all individual measures may be found in Table 3.

Table 3

Correlations Among Individual Variables

	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16
Kindergarten Predictor Variables																
1 CES Depression Mean Score	--															
2 Family Stress Questionnaire Total Score	.47**	--														
3 Parenting Daily Hassles Total Score	.49**	.37**	--													
4 Parent Reading Belief Inventory – Knowledge Base Mean Score	-.13	.11	-.04	--												
5 Parent Reading Belief Inventory – Reading Instruction Mean Score	.10	.13	.004	.54**	--											
6 Parent-Teacher Involvement Mean Score	-.10	-.09	-.19*	.16	.07	--										
7 Parent Expectations and Aspirations Mean Score	-.14	-.08	-.22**	.09	.26**	.18*	--									
8 Letter-Word Identification Standard Score (Covariate)	.02	-.09	-.003	-.04	.01	.16	.10	--								
9 TOWRE SWE Total Score (Covariate)	.02	-.08	-.05	-.05	-.002	.12	.16	.57**	--							
10 TOWRE PDE Total Score (Covariate)	-.07	-.23**	-.09	.009	-.07	.13	.15	.25**	.30**	--						
11 Learning Behaviors Total Score (Covariate)	-.17*	-.18*	-.12	.19*	.14	.33**	.38**	.19**	.23**	.28**	--					
First Grade Mediator Variable																
12 Learning Behaviors Total Score	-.10	-.24**	-.21*	.24**	.20*	.18*	.20*	.16	.27**	.30**	.36**	--				
Second Grade Outcomes																
13 Letter-Word Identification Standard Score	-.22*	-.15	-.12	-.03	-.05	.09	.25**	.14	.13	.35**	.34**	.22*	--			
14 TOWRE SWE Total Score	-.13	-.17	-.17	.05	.05	.17	.30**	.22*	.29**	.31**	.33**	.44**	.69**	--		
15 TOWRE PDE Total Score	-.06	-.07	-.06	.01	.11	.19*	.32**	.23**	.28**	.22*	.26**	.32**	.72**	.83**	--	
16 Sight Word Reading Percent Correct	-.21	-.16	-.18*	.08	-.01	.11	.22*	.16	.22*	.28**	.37**	.34**	.78**	.80**	.67**	--

Note. *Correlation is significant at the .05 level (2-tailed).
**Correlation is significant at the .01 level (2-tailed).

Analysis Approach

Path model. A longitudinal path model was estimated to test the hypothesis that LRS measured in first grade would act as a mediator between the family contextual variables measured at kindergarten and reading outcomes in second grade, such that students whose parents report lower levels of demoralization, higher levels of support for learning, and higher levels of aspirations and expectations at kindergarten would have higher levels of LRS as rated by their teachers at first grade, which would in turn be associated with better reading outcomes in second grade, controlling for prior reading achievement and prior LRS.

CHAPTER 4

Results

This chapter provides an overview of the results of the longitudinal path model that tested the hypothesis that LRS measured in first grade would mediate the relationship between family context variables measured in kindergarten and reading outcomes measured in second grade, controlling for baseline levels of LRS and literacy skills.

Data Analytic Strategy

Structural equation modeling (SEM) refers to a collection of statistical procedures that may be used to evaluate theoretically-driven hypotheses as they apply to empirical data (Kline, 2011). SEM is a confirmatory approach, with hypotheses specified a-priori and then viably examined within the data. Some SEM techniques involve the analysis of relationships between observed variables (path analysis), whereas other techniques examine latent variables (structural analysis) or a combination of observed and latent structures. The current study examined hypothesized structural relationships over time between observed variables via a path model. Hypotheses were guided by a review and synthesis of the literature and informed by past research.

SEM, or more specifically, path analysis, may offer several advantages over other data analysis techniques when examining meditational relationships (Gunzler, Chen, Wu, & Zhang, 2013). For instance, path analysis may be considered superior to multiple regression in examining relationships such as the mediation being tested in the present study. In path analysis, variables may simultaneously be treated as predictors (exogenous variables) and outcomes (endogenous variables), and relationships over time among several variables may also be examined. Furthermore, SEM allows for more flexibility when handling missing data.

Techniques such as full information maximum likelihood allow researchers to preserve available information in model estimation when data is missing at random rather than utilizing older methods such as listwise and pairwise deletion (Graham, 2009). Lastly, SEM techniques including path analysis allow researchers to examine overall model fit to determine the plausibility of casual assumptions (Gunzler et al., 2013).

Data screening. IBM SPSS Amos Version 23 (Arbuckle, 2014) was used for all analyses. A critically important assumption of SEM analyses is multivariate normality of the data (Byrne, 2010). However, before examining multivariate normality, univariate normality must also be inspected (DeCarlo, 1997). Univariate skewness for each variable in the model fell within the acceptable range according to Kline (2011), with all skewness values being less than |3.0|. Furthermore, research indicates that evidence of kurtosis can be particularly problematic with SEM analyses (DeCarlo, 1997). Univariate kurtosis values for each variable also fell within the acceptable range, with all kurtosis values less than 7.0 (Kline, 2011). All univariate skewness and kurtosis values are presented in Table 4.

Table 4

Univariate Summary Statistics for Continuous Variables

Variable	Skewness	Skewness Range	Kurtosis	Kurtosis Range
Kindergarten Predictor Variables				
Parent Demoralization and Family Stress - Standardized Composite	1.23	Moderate	2.02	Mild
Parent Support for Learning – Standardized Composite	0.17	Mild	-0.49	Mild
Parent Expectations and Aspirations	-0.68	Mild	-0.02	Mild
Literacy Skills - Standardized Composite (Covariate)	2.14	Moderate	6.62	Mild
Learning Behaviors Scale (Covariate)	-0.41	Mild	0.72	Mild
Kindergarten Predictor Variables				
Learning Behaviors Scale	-0.58	Mild	-0.73	Mild
Second Grade Outcome Variable				
Standardized Reading Composite	-0.96	Mild	.062	Mild

Note. Univariate skewness and kurtosis ranges were based on the following criterion (Kline, 2011): skewness: ≤ 1 mild, |1| - |3| moderate, >|3| extreme; kurtosis: -1.3 - 7 mild, 7 - 10 moderate, >10 extreme.

Although all variables were found to have univariate normal distributions, it is also necessary to examine multivariate normality because the presence of univariate normality does not necessarily guarantee multivariate normality (West, Finch, & Curran, 1995). Data that are multivariate kurtotic are especially problematic for SEM analyses (Raykov & Marcoulides, 2000) so it was deemed necessary to inspect multivariate kurtosis before proceeding with the SEM analyses. IBM SPSS Amos Version 23 currently does not provide an estimate of multivariate normality with missing data, as was the case with this dataset (discussed subsequently). As a result, LISREL 9.0 Student Version software (Jöreskog & Sörbom, 2015) was used to inspect multivariate kurtosis. The relative multivariate kurtosis value was found to be 1.05, indicating that multivariate kurtosis is approximately 5% larger than that of a normal distribution. Overall, both univariate and multivariate normality were not a problem with this data. The use of robust tests in the analyses was not necessary.

Missing data and outliers. Of the 137 participants, 10 cases (7.3%) were missing data on the first grade LRS scale; 8 cases (5.8%) were missing data on the second grade reading composite; 1 case (0.07%) was missing data on the kindergarten LRS scale. The AMOS software handles missing data based on a maximum likelihood (ML) estimation approach. This approach yields less biased estimates than other methods of handling missing data, such as listwise and pairwise deletion, and allows for the preservation of available data (Arbuckle, 1996).

Outliers were examined by inspecting the frequency distributions of *z*-scores. A *z*-score greater than three standard deviations from the mean indicates a univariate outlier, and a *z*-score greater than three standard deviations from the mean on two or more variables indicates a multivariate outlier (Kline, 2011). Using these criteria, three outliers were detected on the parent demoralization and family stress variable (three cases had *z*-scores greater than +3), one outlier was detected on the parent expectations and aspirations variable (one case had a *z*-score less than -3), and one outlier was detected on kindergarten literacy skill variable (one case had a *z*-score greater than +3). However, no cases were found to have multivariate outliers, or outliers on two or more variables. As a result, no cases were deleted from the dataset, yielding a final sample size of 137.

Preliminary analyses. Descriptive statistics for all variables are presented in Table 5. Bivariate correlations among the composite variables included in the model are presented in Table 6. To further inspect collinearity among variables, Kline (2011) suggests calculating several squared multiple correlations with each variable as a dependent variable and the rest of the variables as predictors. Squared multiple correlation values exceeding .90 are considered to be high and indicative of extreme multivariate collinearity. Similarly, Kline (2011) recommends examining the variance inflation factor (VIF); VIF values exceeding 10 also indicate redundancy

of variables. Both squared multiple correlation and VIF values were examined with the variables in the present study; no obtained values surpassed these thresholds

Table 5

Means, Standard Deviations, Ranges, and Sample Sizes for Predictor, Mediator, and Outcome Variables

	Mean	*SD*	Range	*N*
Kindergarten Predictor Variables				
CES Depression Mean Score	0.64	0.51	0 – 3	137
Family Stress Questionnaire Total Score	2.81	1.97	0 – 9	137
Parenting Daily Hassles Total Score	1.81	0.46	1 – 4	137
Parent Reading Belief Inventory – Knowledge Base Total Score	3.29	0.41	3 – 4	137
Parent Reading Belief Inventory – Reading Instruction Total Score	3.26	0.39	3 – 4	137
Parent-Teacher Involvement Total Score	2.16	0.87	0 – 4	136
Parent Expectations and Aspirations Mean Score	3.21	0.49	2 – 4	137
TOWRE PDE Total Score (Covariate)	0.44	1.52	0 – 10	137
TOWRE SWE Total Score (Covariate)	1.32	2.64	0 – 12	137
Letter-Word Identification Standard Score (Covariate)	88.58	9.69	60 – 105	137
Learning Behaviors Scale (Covariate)	1.28	0.44	0 – 2	136
First Grade Mediator Variable				
Learning Behaviors Scale	1.38	0.46	0 – 2	127
Second Grade Outcomes				
Letter-Word Identification Standard Score	96.82	13.88	26 – 128	129
TOWRE SWE Total Score	45.22	16.43	0 – 71	129
TOWRE PDE Total Score	18.68	11.01	0 – 50	129
Sight Word Reading Percent Correct	38.33	12.15	0 – 46	129

	Mean	*SD*	Range	*N*
Kindergarten Predictor Variables				
1. Parent Demoralization and Family Stress - Standardized Composite	0.01	0.80	-1 – 3	137
2. Parent Support for Learning – Standardized Composite	-0.02	0.69	-2 – 2	137
3. Parent Expectations and Aspirations	3.21	0.49	2 – 4	137
4. Literacy Skills - Standardized Composite (Covariate)	0.06	0.85	-1 – 4	137
5. Learning-Related Skills (Covariate)	1.28	0.44	0 – 2	136
First Grade Mediator Variable				
6. Learning-Related Skills	1.38	0.46	0 – 2	127
Second Grade Outcome Variable				
7. Standardized Reading Composite	0.00	0.95	-3 – 2	129

Note. All included participants met eligibility criteria (i.e., scored at least one standard deviation below the mean on screening assessments). SD = standard deviation; CES = Center for Epidemiologic Studies; TOWRE SWE = Test of Word Reading Efficiency Sight Word Efficiency; TOWRE PDE = Test of Word Reading Efficiency Phonemic Decoding Efficiency.

Table 6

Correlations Among Composite Variables

	1	2	3	4	5	6	7
Kindergarten Predictor Variables							
1 Parent Demoralization and Family Stress Standardized Composite	--						
2 Parent Support for Learning Standardized Composite	-.04	--					
3 Parent Expectations and Aspirations[+]	-.18*	.25**	--				
4 Literacy Skills - Standardized Composite (Covariate)	-.13	.04	.19*	--			
5 Learning Behaviors Total Score (Covariate)	-.17*	.34**	.36**	.30**	--		
First Grade Mediator Variable							
6 Learning Behaviors Scale Total Score[+]	-.23**	.29**	.20*	.36**	.35**	--	
Second Grade Outcome Variable							
7 Standardized Reading Composite	.20*	.10	.30**	.36**	.32**	.36**	--

Note. $N = 137$. [+]Total score of the individual scale represents the composite in the path model.
*Correlation is significant at the .05 level (2-tailed)
**Correlation is significant at the .01 level (2-tailed).

Regarding the kindergarten family predictors, parent support for learning and parent expectations were significantly correlated ($r = .25$, $p < .01$). Parent demoralization and family stress was significantly negatively correlated only with parent expectations ($r = -.18$, $p < .05$).

All kindergarten family predictor variables significantly predicted LRS at first grade in the expected direction, with parent demoralization and family stress having a negative association with first grade LRS ($r = -.23$, $p < .01$) and parent support for learning and parent expectations having a positive association with first grade LRS ($r = .29$ and $r = .20$, respectively). All kindergarten predictor variables were significantly correlated with second grade literacy skills ($r = .20$ - $.30$) with the exception of the parent support for learning variable. First grade LRS was positively associated with literacy skills at second grade ($r = .36$, $p < .01$). Regarding the covariates, as expected, literacy skills at kindergarten positively predicted literacy

skills at second grade ($r = .36$, $p < .01$), and LRS at kindergarten positively predicted LRS at first grade ($r = .35$, $p < .01$).

Path Model

Model identification. The path model is identified, with the number of parameters being less than the number of observations. Likewise, the obtained model is recursive because it does not include correlated disturbances and all causal effects are unidirectional (Kline, 2011). No non-standard procedures (e.g., user-specified starting values, changing convergence criterion, increasing the number of iterations) were employed.

Model fit. A longitudinal path model was specified and estimated to test the hypothesis that first grade LRS would mediate the relationship between the family context predictor variables measured at kindergarten and reading outcomes in second grade, controlling for baseline levels of reading achievement and LRS. More specifically, it was expected that students whose parents reported lower levels of demoralization and higher levels of support for learning and expectations would have higher rates of LRS as rated by their teachers, which would in turn be associated with more positive reading outcomes in second grade. The identified model with standardized path estimates is shown in Figure 3, χ^2 (1, $N = 137$) = 6.06, $p = .11$, $df = 3$, Comparative Fit Index (CFI) = .97, Root Mean Square Error of Approximation (RMSEA) = .09; Standardized Root Mean Square Residual (SRMR; see Table 7). These fit indices indicate that the overall model fit is acceptable (Hu & Bentler, 1999).

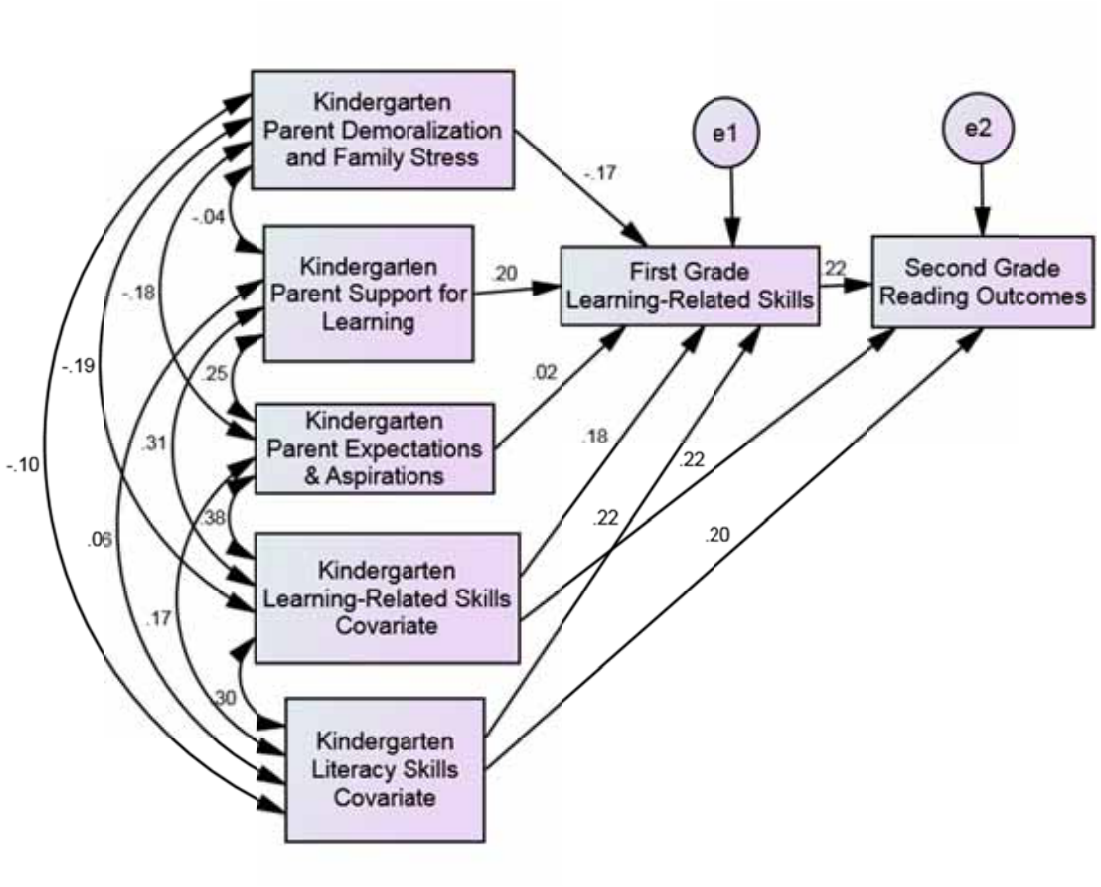

Figure 3. Path model with standardized estimates of first grade learning-related skills as a full mediator between kindergarten parent demoralization and family stress, kindergarten parent support for learning, kindergarten parent expectations and aspirations and second grade reading outcomes, controlling for prior reading achievement and learning-related skills at kindergarten.

Table 7

Selected Overall Fit Indices

	χ^2	*df*	RMSEA	90% CI for RMSEA	CFI	SRMR
Path Model	6.06	3	0.09	[0.00, 0.19]	.97	0.0153

Note. χ^2 = Chi-square; *df* = degrees of freedom; CI = confidence interval; RMSEA = Root Mean Square Error of Approximation; CFI = Comparative Fit Index; SRMR = Standardized Root Mean Square Residual.

Table 8

Parameter and Standard Error Estimates for Path Model

Parameter	Unstandardized Regression Weight	Standardized Regression Weight	SE
Direct effects			
Demoralization → Grade 1 LRS	-.10*	-.17*	.05
Parent Support → Grade 1 LRS	.14*	.20*	.06
Parent Expectations → Grade 1 LRS	.02	.02	.08
Kindergarten LRS → Grade 1 LRS	.19*	.18*	.10
Kindergarten LRS → Grade 2 Reading	.54**	.22**	.19
Kindergarten Reading → Grade 1 LRS	.12**	.22**	.05
Kindergarten Reading → Grade 2 Reading	.21*	.20*	.10
Grade 1 LRS → Grade 2 Reading	.44*	.22*	.18

Note. Table values are maximum likelihood estimates.
*Regression weight is significant at the .05 level.
**Regression weight is significant at the .01 level.

Component fit. All parameters were found to be within range and in the expected direction (see Table 8). The results show that parent demoralization and family stress negatively predicted first grade LRS ($\beta = -.17$, $p < .05$) and parent support for learning positively predicted first grade LRS ($\beta = .20$, $p < .05$). These paths uniquely contributed to first grade LRS, even after controlling for baseline levels of LRS and literacy skills as measured in kindergarten. The path from parent expectations to first grade LRS was not significant ($\beta = .02$, $p = .79$).

Additionally, first grade LRS significantly predicted second grade reading outcomes ($\beta = .22$, $p < .05$), even after controlling for baseline levels of LRS and literacy skills. Kindergarten LRS predicted both first grade LRS ($\beta = .18$, $p < .05$) and second grade outcomes ($\beta = .22$, $p < .01$). Kindergarten literacy skills predicted the development of first grade LRS ($\beta = .22$, $p = < .01$) and second grade literacy skills ($\beta = .20$, $p = < .05$).These findings are consistent with prior research underscoring the relationship between LRS and positive academic outcomes.

CHAPTER 5

Discussion

The present study examined the early contributions of the family context to the development of LRS that predict academic success over time using an at-risk sample of economically disadvantaged children with language and literacy difficulties. A substantial body of research provides evidence to support a positive association between LRS and longitudinal academic achievement (Cerda et al., 2014; Li-Grinning et al., 2010; Matthews et al., 2010, McClelland et al., 2006; Sasser et al., 2015). However, less is understood about the environmental mechanisms by which LRS develop in young children. Given the proximity of the family context to a child's development, it was the goal of the present study to gain an understanding of how various aspects of the family and home environment, including both risk and resilience factors, relate to LRS and achievement over time.

A theoretically-driven longitudinal path model was used to test the meditational hypothesis that students whose parents report lower levels of demoralization, have higher levels of support for learning, and have higher levels of aspirations and expectations at kindergarten would have higher teacher ratings of LRS at first grade, which will in turn be associated with better reading outcomes in second grade, controlling for prior reading achievement and prior LRS. This hypothesis was partially supported, with family risk and some family protective factors being associated with LRS in the expected manner. This study adds to an existing body of research by examining both risk and protective factors in light of the family context; the majority of existing research evaluates risk and protective factors separately. In addition, this study took a multi-informant approach by including both parent and teacher ratings, as well as direct child

measures. Lastly, few, if any, studies have conceptualized LRS as both an outcome and a predictor within the same model.

The Family Context and Learning-Related Skills

The present study partially supported the hypothesis that early home and family contextual variables contribute to the later development of LRS. Turning first to family risk factors, parent demoralization and family stress in the present study negatively predicted first grade LRS, even after accounting for baseline levels of literacy skill and LRS. These findings are consistent with prior research, as numerous studies have documented a negative association between familial risk factors such as these on social-emotional functioning (Gladstone & Kaslow, 1995; Kam et al. 2011; Luoma et al., 2001) and academic achievement (Chazan-Cohen et al., 2009). It has been hypothesized that children raised in environments characterized by economic hardship may have parents who accordingly experience psychological distress (Whittaker, Harden, See, Meisch, & Westbrook, 2011). These parents may lack the ability to provide their children with responsive and sensitive caregiving, reasonable expectations, and appropriate limits and discipline (Crawford & Manassis, 2001). Accordingly, these children become vulnerable for developing difficulties such as a lack of behavioral self-regulation, effortful control, flexibility, positive attitude toward learning, and motivation – namely, those attributes that characterize LRS – and they become at risk for poorer academic outcomes.

Turning next to parent support for learning, this protective factor had a significant positive association with first grade LRS even after controlling for baseline literacy and LRS. Similarly, these results are consistent with what would be expected given the ample evidence suggesting that parent support for learning and its behavioral manifestations can lead to more positive outcomes, including attentional abilities (Dilworth-Bart et al., 2007), emotion

regulation, and improved approaches to learning (Chazan-Cohen et al., 2009). Parent behaviors such as interactive joint reading have been shown to support literacy skill development (Gest et al., 2004; Sénéchal & LeFevre, 2002; Weigel et al., 2007), and parents' beliefs about the importance of their own role in preparing their children for academic success has been associated with more positive outcomes because parents' beliefs serve as a platform for their drive to act upon these beliefs (Drummond & Stipek, 2004; Hoover-Dempsey & Sandler, 1997).

Although two of the kindergarten family predictors were associated with first grade LRS as expected, the third family context predictor, parent expectations and aspirations, was not significantly associated with first grade LRS. Although parent expectations and aspirations had a significant positive bivariate relationship with first grade LRS, a direct effect was not observed when examined in the full model in light of the other model components. There may be several potential explanations for this finding. First, parent expectations and aspirations are postulated to be conceptually distinct from parent support for learning. This distinction stems from the emphasis on future-oriented expectations for achievement with the parent expectations and aspirations variable compared to the emphasis on parent reading instructional behaviors and beliefs about the value of these practices in the parent support for learning variable. However, it is possible that the unique variance related to parent expectations and aspirations in the present study may have been accounted for by parent support for learning in the model, as some of the items on the parent support for learning scales included items assessing parents' perceived goals for their education. Indeed, parent support for learning and parent expectations were highly correlated, but not considered to be redundant (see discussion of collinearity in Chapter 4). Consequently, parent support for learning and parent expectations and aspirations were retained as separate variables in the model. To speak further to this issue, another study examining the

relationship between parent demoralization, parent support for learning, and school readiness did not delineate parent expectations and aspirations as a distinct construct from parent support for learning, but still found support for a significant predictive relationship for both demoralization and support for learning on school readiness (Okado et al., 2013). Lastly, it is possible that parent expectations and aspirations lack the concrete behavioral component that the parent support for learning construct has in this study. Certainly, a multitude of research underscores the importance of not only holding these beliefs, but also acting upon them (Cheadle, 2008).

With regard to the mediation hypothesis, as expected, LRS mediated the relationship between kindergarten family predictors and reading outcomes, controlling for baseline levels of literacy skills and LRS. This finding is consistent with prior research suggesting that children who develop strong LRS may have more positive academic outcomes, even in the face of risk (NICHD ECCRN, 2003). It is also remarkable that LRS measured at kindergarten as well as first grade had a significant positive association with second grade reading outcomes. The early presence of this constellation of learning behaviors is clearly important to a child's academic development and may serve as a protective factor itself.

Overall, the results of this study are in line with years of previous research emphasizing the different ways that the home environment affects child development (e.g., Bradley et al., 2001; Burchinal et al., 2008; Campbell et al., 2004; Chazan-Cohen et al., 2009; Cheadle, 2008). It is noteworthy that both family risk factors (parent demoralization and family stress) and protective factors (parent support for learning) had significant associations with LRS over time, and these effects remained even when accounting for baseline differences in literacy skill and LRS.

Implications

This research helps provide an understanding of how risk and resilience centered on the home environment relate to child outcomes over time, especially among highly at-risk children. Research has also indicated that impoverished families in particular may benefit the most from intervention efforts because of their increased susceptibility to environmental influences, as compared to more affluent families (Turkeimer, Haley, Waldron, D'Onofrio, & Gottesman , 2003). Given that meaningful associations were found in this study between the home variables and outcomes, the home should be considered a primary point of intervention for at-risk students. Indeed, these findings indicated that both parents' actions and their beliefs about their role in helping their child were associated with more positive outcomes. Accordingly, interventions aimed at improving parenting practices should focus on not only encouraging parents to take behavioral steps in providing instruction to their children, but also on improving parents' self-efficacy and confidence in their own abilities as teachers and role models. Similarly, there are policy implications at the state and national level about the importance of high quality child care. Early intervention programs such as Head Start that aim to close the achievement gap between impoverished children and their peers should include practices to promote positive parenting skills to the greatest extent possible. In schools, conversations should shift from how to manage children who lack appropriate LRS to how to support families who need resources for parenting and promoting LRS development.

This research also demonstrates to educational leaders and stakeholders how home-school partnerships and community resources fit within a tiered model of service delivery at the primary prevention level. By utilizing avenues such as family support centers and other forms of community outreach, struggling families can be linked with the community and school resources

that match their needs. At the secondary tier of students who display an indicated need, administrators, mental health professionals, and/or behavioral specialists in elementary schools may consider providing explicit instruction in LRS. The significance of nonacademic LRS to future achievement was upheld in this study. In today's standards-based educational climate, schools' and teachers' primary focus is providing children with the academic skills needed to meet various performance criteria. However, given the consistent link found between nonacademic learning-related skills and behaviors and future scholastic performance, educational professionals should begin to direct their attention on ways in which they can cultivate LRS in young children. Unlike fixed child-level attributes such as IQ, learning-related skills and behaviors are susceptible to intervention efforts. Further, research suggests that learning-related skills and behaviors may even supersede intelligence as a primary predictor of academic achievement. Thus, schools may consider incorporating supplementary curricula that explicitly teach self-regulation strategies, executive functioning skills, social skills, and the other various learning-related skills and behaviors discussed throughout this paper. In doing so, at-risk learners may be placed on a path toward success.

Limitations

Several limitations to this research must be discussed. First, the generalization of findings from this study is limited due to the nature of the sample. Data was obtained from a small sample of predominantly rural communities in the northeast United States, and students were oversampled for language and literacy difficulties. Although it was a goal of the present study to understand the contributions of the family context to development particularly in at-risk populations, results should be interpreted with the understanding that family processes in the

low-income families may be different from those in families that have more access to resources, and that students with delays in language development were specifically targeted for this sample. Second, the obtained sample size (n = 137) in the present study was considered to be moderate-sized; larger sample sizes (i.e., > 200) are generally recommended in SEM analyses, with this criterion varying depending on model complexity (Kline, 2011).

Third, the constructs and relationships under examination in the model are complex and have been conceptualized in numerous ways across researchers. For instance, the creation of the parent demoralization and family stress composite in the present study was guided by theory and prior research within the confines of the available data. This composite was presented in a unified manner, encompassing elements of maternal depression, family stressors, and daily life hassles. However, it has also been suggested that family risk be examined separately by contextual factors (e.g., socioeconomic status) or proximal psychological factors (e.g., depression; Whittaker et al., 2011). Similarly, LRS as a construct has also been defined in several different ways, including elements of social competence, effortful control, behavioral self-regulation, or some combination of these. In the present study, the LRS measure included items primarily assessing competence/motivation; attitude toward learning, attention/persistence, and strategy/flexibility (McDermott et al., 1999). Future studies may include a closer examination of the social competence aspect of LRS.

Fourth, this study relied on parent and teacher reports of child behaviors. These reports may have introduced measurement error into the model if these forms of measurement are not perfectly reliable. Although the measures used generally had adequate internal consistency, bias could have been a factor if parents and teachers reported on questionnaires in a manner presumed to be desirable rather than with their actual experiences. When reporting on sensitive issues such

as depression, parents may be especially prone to bias. Composite scores were used to represent constructs in the model, which may also introduce measurement error. In the case of the parent support for learning variable, the composite reflected ratings by both parents and teachers. The parent expectation and aspirations variable was a brief abbreviated measure. This study could be strengthened by using lengthier measures and examining latent constructs and structural relationships between variables using full structural equation modeling.

Future Directions

This research took a broad approach when examining the relationship between the family context and child outcomes. Future research may examine these relationships in a more targeted manner to gain a better understanding of the mechanisms driving these associations. For instance, specific aspects of the home environment such as maternal sensitivity have been found to mediate the relationship between parenting stress and child outcomes (Whittaker et al., 2011). The present study did not examine the home environment on such a micro-level. Although effort was made to account for possible confounding variables in the present study (e.g., baseline levels of literacy skills and LRS), it is possible that other extraneous variables not represented in the model may better explain the relationship between the home and family predictors and outcomes. Additional studies may give further consideration to potential confounding factors not addressed in this study. Other analytic techniques such as latent profile analyses may reveal interesting patterns of risk and resilient profiles among groups of at-risk children. As alluded to previously, the replication of these findings with a full structural equation model to explicitly estimate latent constructs would lend further credence to these findings and correct some of the measurement concerns with the study as addressed above. The parent expectations and aspirations construct

may be examined using a longer, more multidimensional scale than the one used in the present study.

There is considerable variability among cultures with regard to parent expectations for child achievement and parents' beliefs about their own role in their child's education. For instance, Asian American parents have been found to have higher perceived achievement expectations for their children, which are linked to more positive academic outcomes (Peng & Wright, 1994). It would be interesting to continue to explore differences in beliefs, practices, and expectations as a function of parent and families' membership in certain racial, cultural, or ethnic groups.

Due to the constraints of the available data, decoding skills were the primary reading outcomes examined at second grade. As such, this study did not take into account the relationships between family predictors and LRS as they relate to higher-level reading skills such as fluency and comprehension, but these areas are recommended for future research. Additionally, it would also be informative to learn whether a similar pattern of results would be found using numeracy skills as an outcome. Future researchers in this area may also consider studying gender differences and whether parenting behaviors are different towards boys versus girls.

Given the nature of research questions involving risk and resilience stemming from the home environment, it is difficult or impossible to examine these matters experimentally. As such, conclusions and inferences from research in these areas must be made with caution and thorough understanding of implications. However, research investigating the effectiveness of parenting programs and home-based interventions on child outcomes may be done in an experimental manner involving random assignment to invention and control groups. By doing so, future

researchers may be able to contribute to an evidence base for effective parenting programs. Thus, forthcoming research may shift from examining the processes and mechanisms related to risk and resilience to developing adequate forms of intervention.

Concluding Remarks

Children living in high-risk environments characterized by socioeconomic hardship face numerous obstacles to achieving success in school and beyond. In the absence of early intervention, the gap between these children and their peers will continue to grow well into their academic careers, making them at-risk for poorer scholastic outcomes, higher rates of externalizing behavior problems, and even difficulty obtaining employment (Ryan, Fauth, & Brooks-Gunn, 2006). A plethora of researchers over the past few decades have reiterated the need for programs that meet these vulnerabilities in at-risk children with the resources and instruction that they need to close the achievement gap. With this research has come an improved understanding of the school readiness and learning-related skills that may buffer at-risk children from poor academic outcomes.

The present study adds to this understanding by demonstrating a significant association between family risk and protective factors and the skills and behaviors that are associated with more positive academic outcomes, using a multi-informant longitudinal model. Accordingly, educational professionals are presently faced with the two-fold task of cultivating a sense of resourcefulness among parents and families in need and supporting the development of the learning-related skills at school that are so important for later academic achievement.

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Appendix A

Feelings Questionnaire
(CES Depression Scale)

General Instructions: *Now, I'm going to ask you some questions about how you've been feeling during the past week. Using this chart, tell me whether you've felt these different things rarely, which would be a day or less in the past week, sometimes, which would mean about one or two days in the past week, occasionally, which would mean about three or four days in the past week, or almost all of the time, which would mean five to seven days in the past week.*

Rarely (<1 day)	Sometimes (1-2 days)	Occasionally (3-4 days)	Almost all the time (5-7 days)
0	1	2	3

1. During the past week, how often were you bothered by things that usually don't bother you?
2. How often did you not feel like eating or have a poor appetite?
3. How often did you feel that you couldn't shake off the blues, even with the help from family or friends?
4. How often did you feel that you were just as good as other people?
5. How often did you have trouble keeping your mind on what you were doing?
6. How often did you feel depressed?
7. How often did you feel that everything you did was an effort?
8. How often did you feel hopeful about the future?
9. How often did you think your life had been a failure?
10. How often did you feel afraid or fearful?
11. How often was your sleep restless?
12. How often were you happy?
13. How often did you talk less than usual?
14. How often did you feel lonely?
15. How often were people unfriendly?
16. How often did you enjoy life?
17. How often did you have crying spells?
18. How often did you feel sad?
19. How often did you feel that people dislike you?
20. How often did you feel you couldn't get going?

Appendix A continued

Parenting Daily Hassles Questionnaire

General Instructions*: These statements describe events that regularly occur in families and make life hectic. Tell me how often they happen in your family.*

Rarely	Sometimes	Often	Almost Always
1	2	3	4

1. Continually cleaning up messes of toys and food.
2. Mealtime difficulties, such as picky eaters and complaining.
3. Trouble finding someone to take care of your child when you need to do something else.
4. The children's schedules interfere with what you need to do at home.
5. The children argue and fight.
6. Children resist bedtime.
7. Children constantly get in the way or interfere with chores.
8. You have to change your plans because your child needs something unexpectedly.
9. Children get dirty several times a day, requiring many changes of clothes.
10. Trouble getting children ready for school or leaving on time.
11. Difficulties in finding good childcare for your children.
12. Having to run extra errands to meet your children's needs.

Appendix A continued

Family Stress Questionnaire

General Instructions*: Now I'm going to read you a list of events that happen to some families over the course of a year. Tell me whether or not each event has happened to your family in the last year.*

Yes	No
1	0

1. Your family moved.
2. Someone in your immediate family had serious medical problems.
3. A relative or someone close to your family had serious medical problems.
4. Someone close to your family passed away.
5. You and a partner or spouse separated or got divorced.
6. Your child lived with someone else for part of the year.
7. Your family had financial problems.
8. Your family had legal problems.
9. Someone in or close to your family struggled with a drug or alcohol problem.
10. There were lots of arguments and disagreements in your family.
11. Someone in your family had a lot of problems at work.
12. Someone in your family lost a job.

Appendix B

Parent Reading Belief Inventory

General Instructions*: Now I'm going to read several statements about parents' attitudes and beliefs. Please tell me how much you agree or disagree with each statement.*

Strongly Disagree	Disagree	Agree	Strongly Agree
1	2	3	4

Reading Instruction

1. I read with my child so he/she will learn the letters and how to read simple words.
2. Parents should teach children how to read before they start school.
3. My child is too young to learn about reading.
4. When we read, I have my child point out different letters or numbers that are printed in the book.

Knowledge Base

5. I try to make the story more real to my child by relating it to his or her life.
6. Stories help build my child's imagination.
7. My child learns lessons and morals from the stories we read.
8. Reading helps children learn about things they never see in real life, like polar bears.
9. My child learns important life skills, like how to get along with others, from books.

Appendix B continued

Parent-Teacher Involvement Questionnaire

Never	Occasionally	Sometimes	Often	Very often
Not at all	A little	Somewhat	A lot	A great deal
0	1	2	3	4

1. How much are this child's parents interested in getting to know you?
2. How well do you feel you can talk to and be heard by this child's parents?
3. If you had concerns about or a problem with this child, how comfortable would you feel talking to her or his parents about it?
4. How often do this child's parents ask questions or make suggestions about the child?
5. How much do you feel that this child's parents and you have the same goals for this child?
6. To the best of your knowledge, how much do this child's parents do things to encourage this child's positive attitude toward education, such as reading to him or her, taking him or her to the library, or trying to teach him or her new things?
7. How often does a parent of this child volunteer at school?
8. How involved as the parents of this child in his or her education?
9. How important does education seem to be to this family?

Appendix C

Academic Expectations and Aspirations

1. Knowing your child as you do, how far do you think she or he will go in school?
    - 0-8th grade
    - 9-11th grade
    - 12th grade (High school graduation)
    - Attend a vocational or technical school
    - Some college (associate's degree)
    - Four years of college (BA degree)
    - More than that

2. Knowing our child as you do, what is the average grade you expect him/her to receive in school (including elementary school, middle school, and high school?)
    - A's
    - A's & B's
    - B's
    - B's & C's
    - C's
    - Lower than C's

3. How likely do you think it is that your child will be a successful person when he/she grows up?
    - Very likely
    - Somewhat likely
    - Somewhat unlikely
    - Very unlikely

4. How likely do you think it is that your child will be a happy person when he/she grows up?
    - Very likely
    - Somewhat likely
    - Somewhat unlikely
    - Very unlikely

Appendix D

Learning Behaviors Scale

Instructions: *For each statement, please mark the response option that best describes the child. Try to think about what is true of this child, in general. We know that the behavior of children can vary from day to day.*

Most Often Applies	Sometimes Applies	Does Not Apply
2	1	0

1. Responds in a manner that shows attention.
2. Says task is too hard without making much effort to attempt it.
3. Is reluctant to tackle a new task.
4. Sticks to a task with no more than minor distractions.
5. Adopts a don't care attitude to success or failure.
6. Seems to take refuge in dullness or incompetence.
7. Follows peculiar and inflexible procedures in tackling tasks.
8. Shows little desire to please you.
9. Is very hesitant about giving an answer.
10. Shows little determination to complete a task, gives up easily.
11. Tries hard but concentration soon fades and performance deteriorates.
12. Accepts new tasks without fear or resistance.
13. Delays answering in the hope of picking up a hint.

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EDUCATION

Doctor of Philosophy (Ph.D.)	Expected August 2016	School Psychology	The Pennsylvania State University
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School Psychology Clinician, August 2012 – May 2013
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