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# The Effects of Parental Literacy Involvement and Child Reading Interest on the Development of Emergent Literacy Skills

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THE EFFECTS OF PARENTAL LITERACY INVOLVEMENT AND CHILD  
READING INTEREST ON THE DEVELOPMENT OF EMERGENT LITERACY  
SKILLS

by

Crystal Carroll

A Dissertation Submitted in  
Partial Fulfillment of the  
Requirements for the Degree of

Doctor of Philosophy  
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at

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August 2013

**ABSTRACT**  
**THE EFFECTS OF PARENTAL LITERACY INVOLVEMENT AND CHILD  
READING INTEREST ON THE DEVELOPMENT OF EMERGENT LITERACY  
SKILLS**

by

Crystal Carroll

The University of Wisconsin-Milwaukee, 2013  
Under the Supervision of Professor Dr. Karen Stoiber

Acquisition of literacy is best conceptualized as a developmental continuum, with its origins early in the life of a child, rather than an all-or-none phenomenon that begins when children start school. How parents expose their children to literacy even before they enter school is important for the later development of reading. The home environment is an important setting for the acquisition of literacy knowledge because children have unique literacy opportunities at home such as observing literacy activities of others, engaging in joint reading and writing activities with other people, and benefiting from teaching strategies used by family members. Researchers suggest that storybook exposure and parental teaching about literacy are distinct types of activities that differently promote language skills and the acquisition of early literacy skills. This study used hierarchical regression analyses to examine the role of storybook exposure and direct parental teaching of emergent literacy in addition to child interest of reading and literacy activities to predict emergent literacy outcomes using an ethnically diverse sample of preschool aged children from low socio-economic status (SES) backgrounds. The study found that young children's book exposure predicts oral language development. This has important implications for parental involvement in children's education.

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## CHAPTER 1: INTRODUCTION

Learning to read is a complex process that involves a variety of skills and abilities. Children have to apply their existing knowledge and experiences to reading tasks in addition to using reading skills such as reading comprehension and decoding abilities. Literacy is one of the most important academic skill areas because it influences skill acquisition in other academic areas (Stanovich, 1986). Successful readers tend to gain more exposure to learning opportunities through reading than their peers who experience reading difficulties (Stanovich, 1986). This suggests that differences in literacy skills have a substantial impact on learning over time. For example, Mol and Bus (2011) examined whether the association between print exposure and components of reading grows stronger with children's development. Mol and Bus meta-analyzed 99 studies ( $N = 7,669$ ) that focused on leisure time reading of (a) preschoolers and kindergartners, (b) children attending Grades 1–12, and (c) college and university students. They measured reading comprehension, oral language such as expressive and receptive vocabulary, general achievement measures (such as intelligence and academic achievement tests used for eligibility for universities), and technical reading and spelling measures (alphabet knowledge, phonological processing, orthographic processing, word identification, and word attack). They found moderate to strong correlations (moderate correlations =  $0.3 < r < 0.7$ , strong correlations =  $r > 0.7$ ) between all reading measures and print exposure. From these results, Mol and Bus (2011) argued that children who are more proficient with comprehension, technical reading and spelling skills end up reading more; due to the children's increased print exposure, their comprehension, technical reading, and spelling skills improved more with each year of education. For example, in

preschool and kindergarten, print exposure explained 12% of the variance in oral language skills, in primary school 13%, in middle school 19%, in high school 30%, and in college and university 34%. Moderate associations of print exposure with academic achievement indicate that frequent readers are students that are more successful. Poor readers are also at risk for broader academic and social failure. Poor readers are less likely to graduate from high school and less likely to be employed (Snow, Burns, & Griffin, 1998).

The preschool years represent a critical transition period for later academic success (Mistry, Biesanz, Taylor, Burchinal, & Cox, 2004). Children spend most of their time separate from a school context, and much of their early literacy learning occurs within a family context at home. Children's experiences with literacy do not typically begin with formal reading and writing instruction in a classroom. Most children become acquainted with written language long before their first day of school through observing and participating in literacy activities in their homes. The home environment is an important setting for acquiring literacy knowledge because children typically have opportunities at home to observe literacy activities of others, to engage in joint reading and writing activities with other people, and to benefit from direct teaching by family members. Possibly due to the varying home literacy environment, children enter school with different levels of preparedness to benefit from educational experiences (Whitehurst & Lonigan, 1998).

This chapter will discuss background concerning the major factors that affect children's academic success including parental involvement, socioeconomic status, and

the home literacy environment. Afterwards, the purpose of the research and the research questions will be given.

## **Background**

### **Parental Involvement**

Parental involvement at an early age in children's literacy development is very important for school success. Young elementary-aged children who have higher levels of parental involvement, such as parents attending workshops about literacy and parents encouraging literacy activities at home, show greater literacy growth than students whose parents are not as involved (Leslie & Allen, 1999). Although research has shown that there is an achievement gap in average literacy performance between elementary aged students of more and less educated mothers for low family involvement levels, this gap is nonexistent for high family involvement levels (Dearing, Simpkins, Krieder, & Weiss, 2006). Among preschool aged children, minimal caregiver supervision and involvement with children is associated with children's underdeveloped vocabulary and phonemic awareness skills (Rush, 1999). Additionally, children with low levels of caregiver supervision and involvement displayed non-interactive, passive activity free play, such as television watching; these children could not be sustained on a specific activity for a reasonable amount of time (Rush, 1999).

Maternal expectations are also predictive of school adjustment. Mantzicopoulos (1997) conducted a study of 93 Head Start children and their mothers. The study examined the contribution of family variables (i.e. parenting style, home literacy activities, maternal school involvement, and maternal expectations) to children's preacademic competence as defined by four criteria (standardized achievement tests,

teacher ratings of cognitive competence, children's self-rating of competence, and maternal reports of children's early school adjustment). Results found that maternal educational expectations predicted preacademic achievement and teacher-rated competence. Mothers' engagement in educational activities at home predicted children's self-efficacy beliefs and school adjustment.

### **Socio-Economic Status**

Interest in better understanding the implications of socio-economic status (SES) for children's development has been fueled, in part, by growing concern about the current rates of childhood poverty in the United States, as well as increasing disparities between socio-economic classes (Mistry et al., 2004). The discrepancy between wealthy and poor Americans has grown substantially over the past three decades and is currently greater than the discrepancy in any other Western industrialized country (Committee on Ways and Means, 2004). Catts, Fey, Zhang, and Tomblin (2001) indicated that a set of four variables (letter identification, sentence imitation, phonological awareness, and rapid naming) that encompass both early literacy skills and oral language skills, in addition to a fifth variable representing socioeconomic status all individually predicted the probability of later reading difficulties with 93% accuracy based on a logistic regression analysis.

SES is also positively associated with parental involvement, which has been shown to be related to children's academic achievement (Arnold, Zelj, Doctoroff, & Ortiz, 2008). Income has a greater impact on the well-being of children and families living in poverty than on those not living in poverty; furthermore, this relationship diminishes as income moves further away from the poverty line (Mistry et al., 2004). The stresses that poverty places on parents influences the family system, especially

parents' mental health, quality of parenting, and home literacy processes (Mistry et al., 2004; Parke, Coltrane, Duffy, Buriel, Dennis, Powers, et al., 2004). Young children with limited exposure to educationally stimulating experiences and materials (often a consequence of constrained financial resources) are more likely to show deficiencies in basic literacy and arithmetic skills upon entering school and consequently to be at a disadvantage compared to children who have mastered such skills. The fact that many lower income parents have lower literacy and educational levels themselves is likely to influence the quality of the home literacy environment in the form of literacy practices and attitudes toward literacy.

According to Foster, Lambert, Abbott-Shim, McCarty, and Franze (2005) SES affects Head Start children's school readiness in the areas of emergent literacy competence and social functioning via home learning experiences and social risk. Foster et al. (2005) examined the relationships between family variables (SES, social risk factors, and home learning variables), children's emergent literacy competence, and social functioning with 325 families. They found that one pathway by which SES is associated with children's emergent literacy and social development is through the quality and frequency of learning experiences provided to children in the home. Factors such as financial resources and attitudes toward education shape how parents structure the home and their daily interactions with children. Young children develop the linguistic and social skills necessary for later success in school in these contexts. Another mediating construct, social risk, includes factors related to the functioning of the primary caregiver: family violence and criminal behavior, social support, depression, and mastery of parental skills. This collection of factors is another pathway by which the

influence of low SES can be seen on children's emergent literacy and social functioning. Living in poverty carries with it a range of stressors for parents that ultimately can have deleterious effects on children. Depressed mood, social isolation, diminished feelings of personal efficacy, and the trauma of violence sap the energy, focus, and hope of parents and reduce their ability to provide the attention and encouragement that young children require for literacy development.

Many studies have demonstrated that the negative correlations between poverty and child achievement (Duncan & Brooks-Gunn, 2000) are even stronger than those associated with ethnicity or gender. Chatterji (2006) found that although African American children did show significant gaps compared with Caucasian peers, even when other background characteristics were controlled, these initial reading gaps in kindergarten tend to be more associated with children's poverty levels than with ethnicity or gender. These achievement gaps associated with SES widen from kindergarten to first grade (Chatterji, 2006). Oral language development research can perhaps shed light on these achievement gap differences.

When language scores (receptive and expressive language measures) of children raised in poverty were compared to the general population, they usually scored one standard deviation below the mean (Dickinson, McCabe, Anastasopoulos, Peisner-Feinberg, & Poe, 2003; Fazio, Naremore, & Connell, 1996; Storch & Whitehurst, 2002). However, even though researchers found that young children in poverty had language skills that were, on average, lower than the general population, the children's cognitive abilities fell in the average or normal range (Locke, Ginsborg, & Peers, 2002). These studies suggest that there is a difference in language scores for children reared in poverty

versus children not reared in poverty. Children's abilities to express their thoughts verbally and to understand verbal language tended to be higher when their parents had higher levels of education, income, literacy skills, and reported positive school experiences (Weigel, Martion, & Bennet, 2006a).

Walker, Greenwood, Hart, and Carta's (1994) journal article and Hart and Risley's (1995) book detailing the same pivotal study addressed why children from low SES backgrounds may score lower on language tasks. The researchers conducted a longitudinal study of parent-child talk in families from Kansas. Once a month, a team of researchers recorded one full hour of every word spoken at home between parents and their children (ages ranging from 7 months to 36 months) in 42 families over a three-year period. The families were classified into three main groups: professional families, working class families, and families who were on welfare support. The results were separated by SES, which were measured by parents' reported levels of education, annual family income, and type of employment. Three important findings of the longitudinal study were found: (1) The children's academic successes at ages nine and ten were associated with better vocabulary skills, which were attributable to the amount of speech they heard from birth to age three. (2) Parents of the advanced children talked significantly more to their children than parents of less advanced children. (3) Parents in families with higher incomes and higher education generally spoke more to their children. The consequences of these finding are that SES affects academic achievement through vocabulary exposure. Children from lower SES families had less exposure to diverse vocabulary through their parents' attention and talking than children from higher SES families. Children from higher SES backgrounds had better vocabulary skills, which



contributed to their academic success. These SES-related differences in child language at preschool age predicted subsequent verbal ability, receptive and spoken language, and academic achievement (reading and spelling) on standardized tests in kindergarten through grade 3. One limitation of Hart and Risley's (2005) study is the small sample size (42 families).

Korat (2009) also studied the effects of parental education on children's academic development. This study had a larger sample size than Hart and Risley's (2005) research. Korat (2009) performed a study with 88 mothers and their 5-6 year old age children, in which they studied the level of teaching talk used by mothers from different SES backgrounds during storybook reading and while looking through a photo album. The highly educated mothers (HEMs) used the highest teaching talk level (e.g. parent conversations with children that go beyond the immediate information or children's immediate knowledge) significantly more often than they used the other two lower levels of teaching talk (e.g. levels of parents' discussions of issues restricted to children's current knowledge about the world or confined to specific issues or objects and focuses less on general knowledge). The less highly educated mothers (LEMs) used middle and low levels of teaching talk more frequently. Consequently, children with more highly educated mothers are provided with a more cognitively challenging environment that stimulates their children's language development. This study further supports the hypothesis that oral language development influences children's academic development with SES being a factor.

Chatterji (2006) found that even though the influence of SES factors on reading tended to be strongest in prekindergarten years, by first grade, such effects appeared to

diminish, and prior preparation in reading became a more influential factor. SES variables by themselves accounted for 5% of the variance in first-grade reading outcomes; with prior reading preparation added to the models, the predictive power increased to 38%. This finding highlights the importance of high quality home literacy and preschool experiences in early childhood.

The findings from these studies suggest that a lack of quality oral language exposure in the first 6 years of children's lives may place them at risk for progressive and cumulative poor academic performance in early elementary school. What other factors related to SES contribute to differences in children's academic abilities upon entering school? Some research suggests that parental beliefs about literacy and the home literacy environment also contribute to better achievement levels.

### **Parental Beliefs and the Home Literacy Environment**

DeBaryshe (1995) examined 60 low-income families and 56 working-class families' maternal beliefs about reading aloud to their children. She hypothesized that maternal beliefs stem from class backgrounds (SES), from literacy skills, and from personal interest in reading. DeBaryshe found that parental literacy habits and abilities, as well as parental socioeconomic status, were positively associated with parents' literacy beliefs. Education, income, and the mother's self-reading habits predicted maternal beliefs about reading aloud. Mothers who held beliefs consistent with current models of emergent literacy provided their children with broader and more frequent joint reading experiences; they also engaged in more discussion with their children when reading aloud. DeBaryshe also found that although parental beliefs were correlated to SES status, they are a separate factor that plays a key role in the home reading experience.

Van Steensel (2006) examined the relationship between the home literacy environment and literacy development in children's early years, using a sample of children from different SES and ethnic-cultural backgrounds. The sample consisted of 48 native Dutch families and 68 ethnic minority families. Two types of data were collected: data on the children's home literacy environment collected through a parental questionnaire and data on children's literacy development from kindergarten through second grade collected by standardized school tests and teacher observations. The measure of home literacy environment included the individual literacy activities of each family member (including siblings) and joint literacy activities involving the child such as shared book reading, storytelling, library visits, watching literacy-focused television programs, singing children's songs/rhyming, and shared writing activities. Van Steensel found an association between the home literacy environment and SES. The majority of children from high SES families had the most stimulating home literacy environment. However, considerable variability in the home literacy environment existed within the low SES groups. Additionally, the home literacy environment profiles were found to be related to literacy outcomes in kindergarten through second grade. Better home literacy environments have a positive effect on children's vocabulary scores in first grade and on their general reading comprehension both in first and second grade.

### **Purpose of Research**

Reading requires the coordination and interaction of multiple skills, including recognition of individual letters, translation of letters into sounds, determination of the meaning of a word, and interpretation and understanding of the text as a whole. Although these processes may be inseparable in the mature, fluent reader, these processes

are not integrated initially. Lonigan and Whitehurst (1998) document research indicating there are large social class differences in children's exposure to experiences that might support the development of emergent literacy skills. Among this research are studies that document differences in the pattern of book ownership and the frequency of shared reading between lower- versus higher-SES families. Children's development of reading skills may be largely determined by their early home environment, and their access to literary information may be a determinant of their success in school. Before ever entering school, some children may have many opportunities at home to learn letters, sounds, and other emergent literacy skills (print awareness, writing, etc.). These opportunities, which are more generally available to children in more middle and upper class homes, might explain their literary success. What parents do regarding teaching their children about literacy and promoting their motivation to read is important. Understanding the role of the home literacy environment in children's language and literacy development during the preschool years has important implications for children's later literacy success.

This paper will present a study of the home literacy environment (HLE) of families with children aged 3-5 who are attending Head Start programs. The study examined the impact of the HLE and child literacy interest on the children's emergent literacy skills. Through parental questionnaires and assessments of children's early literacy skills, the work in this study examined the relationship between parental involvement and children's emergent literacy abilities. This study will address the questions: does child literacy interest or home literacy experiences differentially predict

emergent literacy outcomes such as oral language, alphabet knowledge, and print awareness while controlling for age and Head Start classroom literacy environment.

Chapter 2 discusses the current state of research in regarding the links between the home literacy environments and early literacy skills by addressing six areas: a) early reading theories that led to the most current theory of “emergent literacy”, b) how oral language development is linked to emergent literacy), c) what early literacy variables constitute emergent literacy (i.e. alphabet knowledge, and print awareness), d) how emergent literacy skills predicts children’s later reading achievement, e) what research has been conducted on home literacy environments and how those environments relate to emergent literacy development for young children, and f) how child interest fosters development of reading. Chapter 3 will address the methodology of the study. Chapter 4 will address the results of the study. Chapter 5 will discuss the implications and conclusions of the study.

## **CHAPTER 2: LITERATURE REVIEW**

This chapter addresses six areas of research. The first area explores early reading theories that led to the most current theory of “emergent literacy”. The second section examines how oral language skills relate to emergent literacy. The third section explores what literacy variables constitute emergent literacy. The fourth area examines how emergent literacy skills predict children’s later reading achievement. The fifth section discusses research on home literacy environments and how those environments relate to emergent literacy development for young children. Finally, the sixth area discusses how child literacy interest fosters development of reading.

### **Literacy Theories**

Reading development theories have changed several times in the past 100 years. Maturation-neural ripening was a popular theory of reading from the 1920’s to 1950’s. Within this paradigm, a child’s mental age was important (Crawford, 1995). In a maturationist view, all children pass through a series of stages that cannot be hurried. Maturation occurs as a result of a biological process of neural ripening, like ripening fruit or blossoming. It was thought that nature must be free to take its course and damage might occur if children were hurried into reading. The general assumption was that young children were not ready to learn to read until a mental age of six (Crawford, 1995). The role of parents in early literacy development was minimal and not considered very important.

During the late 1950’s, research began the move to a “reading readiness” approach. This approach focused on the skills children need to master before they could benefit from formal reading instruction at school (Coltheart, 1979). During this era,

people began to theorize that reading skills developed in young children as a product of experience (Coltheart, 1979). Consequently, preschools were developed during this time. Within the reading readiness view, the key idea is that children must be ready to learn how to read; however, nurturing takes precedence over letting nature take its course and development occurs in sequenced steps. The act of reading can be broken down into a series of isolated skills and arranged into a skill hierarchy. For example, reading skills must develop before writing skills can. Prereading activities such as matching shapes and coloring different objects are introduced as a lead-up to reading readiness. Reading is viewed as a separate skill—a content area unto itself. In this theory, a period of preparation is necessary before formal reading instruction can take place, but literacy development does not begin until the child enters formal instruction in school. While formal aspects of reading are thought to be important, functionality is not considered important. Consequently, reading is learned best through direct systematic instruction (Crawford, 1995).

In the 1980's, "emergent literacy" replaced "reading readiness" as the prevailing theory of literacy development. Marie Clay, considered by many as the maven of emergent literacy, began a line of research that, decades later, still stands as a model for how to examine young children's progression from nonreaders to readers. According to Clay (2001), children develop processing systems (e.g. the syntax of oral language; meanings of words; visual forms of objects, pictures, scenes; making sense of daily activities, and understanding stories) as a consequence of early life experiences. From a developmental perspective, the foundational age when the process of discovering symbolic systems begins is about 2 years old for most children (Bruner, 1983). To read

print successfully, Clay (2001) theorized, children must develop processing systems needed to decode graphic symbols. Children arrive at formal literacy instruction with the developed systems based on earlier experiences.

The emergent literacy perspective borrowed from two theories of child development. From Piagetian theory, emergent literacy draws its emphasis on children learning and discovering literacy through their own attempts at reading and writing (Ferriero, 1986) such that children are active participants in their own learning. Emergent literacy also borrowed from Vygotskian theory by recognizing that young children learn from their interactions with others (Rogoff, 1990).

In their book, Teale and Sulzby (1986) summarized the emergent literacy research from the 1970's and 1980's. Their summary led to the following six conclusions about emergent literacy: (1) Literacy development begins long before children start formal instruction. Children use legitimate reading and writing behaviors in the informal settings of home and community. (2) Listening, speaking, reading, and writing abilities develop concurrently and independently, rather than sequentially. (3) Literacy develops in real-life settings for real-life activities in order to "get things done". Therefore, the functions of literacy are as integral a part of learning about writing and reading during early childhood as are the forms of literacy. (4) Children are doing critical cognitive work in literacy development from birth to age six. (5) Children learn written language through active engagement with their world. They interact socially with adults in reading and writing situations, they explore print on their own, and they profit from the modeling of literacy by significant adults, particularly their parents. (6) Children can pass through



the stages of literacy in a variety of ways and at different ages. Any attempt to “scope and sequence” instruction should consider this developmental variation.

The term *emergent literacy* acknowledges that children learn a great deal about literacy before the onset of formal schooling. There are several components of literacy that children learn before they start formal schooling: vocabulary, syntax, narrative structure, metalinguistic aspects of language, letters, text that directly relates to the acquisition of conventional reading (i.e. decoding and comprehension) and writing (Whitehurst & Lonigan, 1998). Acquisition of literacy is best conceptualized as a developmental continuum, with its origins early in the life of a child, rather than an all-or-none phenomenon that begins when children start school (Whitehurst & Lonigan, 1998). The emergent literacy conceptualization departs from other perspectives on reading acquisition in suggesting that there is no clear separation between reading and prereading. An emergent literacy perspective views literacy-related behaviors occurring in the preschool period as important aspects of literacy.

Since emergent literacy theory has only been studied for approximately 40 years, researchers still dispute the components of emergent literacy. Mason and Stewart (1990) and Whitehurst and Lonigan (1998, 2001) presented emergent literacy as a broad construct that includes a wide range of behaviors, from conceptual knowledge about the functions of literacy to more specific skills related to print, language, and metalinguistics. Both Mason and Stewart (1990) and Whitehurst and Lonigan (1998, 2001) included similar elements in their emergent literacy theories. These elements included four themes. (1) Conceptual knowledge such as: children’s knowledge about how the act of reading is carried out (e.g. reading words and not pictures in books), their understanding

of the functions of print (e.g. newspapers to communicate current events), their reenactments of reading familiar story books, and their knowledge of printed words (e.g. Pepsi logo). (2) Children's procedural knowledge about reading and writing, which includes children's knowledge about the mechanics of reading and writing and very specific knowledge about literacy such as children's letter knowledge, their knowledge of grapheme-phoneme correspondence rules, and their word recognition skills. (3) Many aspects of children's language (e.g. vocabulary, narrative knowledge), including children's word and sentence writing and story composition, their ability to tell stories, and their ability to define and categorize words. (4) Children's metalinguistic skills (i.e. their awareness of the structure of their language, such as phonological awareness of sounds in words). Whitehurst and Lonigan (1998, 2001) classified conceptual literacy behaviors as outside-in processes (e.g. understanding of the conventions of print, reading environmental print, vocabulary, and narrative construction) and they classified procedural literacy behaviors as inside-out processes (e.g. letter-name and letter-sound knowledge, phonetic spelling, and language-based components such as phonological and syntactic awareness). In their classification of emergent literacy, neither the Mason and Stewart model (1990) nor the Whitehurst and Lonigan model (1998) differentiated oral language skills such as vocabulary from literacy skills such as alphabet knowledge, decoding, and knowledge of print conventions. Instead, they interleave aspects of language, metalinguistic skills, and literacy across the two components of their classification systems of emergent literacy.

There is some evidence suggesting that the distinction between conceptual and procedural knowledge would be helpful in understanding children's acquisition of

literacy. Research suggests that procedural and conceptual emergent literacy tests measure different emergent literacy skills (Whitehurst, Epstein, Angell, Payne, Crone, & Fischel, 1994) and procedural and conceptual literacy skills each have different links to reading at the end of first grade (Lonigan, Burgess, & Anthony, 2000). Phonological skills, which are part of procedural skills, are critical in first grade when reading primarily involves learning to decode words, while conceptual knowledge plays a significant role in the higher grades, when comprehension processes are involved in fluent reading (Whitehurst et al., 1994; Whitehurst & Lonigan, 2001).

Some researchers propose that language, metalinguistic skills, and emergent literacy are distinct skills. Sénéchal, LeFevre, Smith-Chant, and Colton's (2001) proposed model expanded on differentiating oral language, metalinguistic skills, and reading within the emergent literacy paradigm. Similarly to Mason and Stewart (1990) and Whitehurst and Lonigan (1998, 2001), they proposed that emergent literacy is composed of two distinct components—children's conceptual knowledge (print) and children's early procedural knowledge of reading and writing. However, Sénéchal et al. (2001) hypothesized that emergent literacy is distinct but related from oral language and metalinguistic skills. Children's conceptual knowledge about literacy might be closely related to children's oral language. Early procedural knowledge may play a role in the development of phonological awareness. Sénéchal et al.'s (2001) model did not specify the relations that the two proposed components have with oral language, metalinguistic skills, and reading nor does it specify whether these relations change over time. The distinction in all theories of emergent literacy parallels a "simple view" of reading put forth by Gough and Tunmer (1986). This theory conceptualized reading as the product of

decoding and comprehension. Decoding was defined as translating print to sound and, in doing so, recognizing spoken words in print and their associated meaning whereas comprehension was defined as the understanding of what is read. These two domains are interrelated during the preschool period. For instance, measures of preschoolers' skills in syntax exhibit statistically significant positive and moderate correlations with concurrent code-related skills in rhyme and alphabet knowledge (Burgess & Lonigan, 1998).

The following section details the research of oral language development and its relation to “emergent literacy.” Also, research investigating how phonological awareness, alphabet knowledge (letter name knowledge and letter sound knowledge), and concepts of print and written language contribute to emergent literacy and reading development is explored later in this chapter.

### **Oral Language**

Oral language is defined, very basically, as a complex system that relates sounds to meanings; it is made up of three components: the phonological, semantic, and syntactic. The phonological component is the ability to detect, segment, and blend phonemes (sounds) and to manipulate their position in words. The semantic component consists of morphemes—the smallest units of meaning that can be combined with each other to make up words (for example, “paper” and “s” are the two morphemes that make up “papers”). The syntactic component consists of the rules that enable us to combine morphemes into sentences.

The relationship between oral language and emergent literacy skills may not be a linear one (Cabell, Justice, Konold, & McGinty, 2011). Research supports that emergent literacy is not a unitary construct. Language and literacy appear to be different skills

because all children acquire oral language skills to various degrees before formal schooling, whereas literacy skills are not necessarily acquired prior to formal schooling, and are specific to the use of print (Teale & Sulzby, 1986). Research of the different components of emergent literacy suggest that reading development is best conceived as a result of two distinct interacting factors—oral-language skills and code-related skills (Storch & Whitehurst, 2002). Lonigan et al. (2000) conducted confirmatory factor analyses to show that reading models that separated oral language, phonological awareness, and print awareness captured children's performance better than models that combined these skills. Similarly, Whitehurst et al. (1994) found that measures of oral language, writing, and metalinguistic awareness loaded on different factors, meaning they measure distinct areas of reading.

Why is oral language important in children's development of reading skills? Researchers have established for a long time that children's oral language skills developed in their first five years are important for academic achievement (Teale & Sulzby, 1986). Children with more supportive home learning experiences in the first year of life have been found to have better receptive language skills than letter and sound knowledge at five years of age (Rodriguez & Tamis-LeMonda, 2011). Some degree of oral language ability may be necessary for growth in code-related skills although the level of ability required is unclear (Cabell et al., 2011). Language impairments during the preschool period represent a significant risk factor for developing a reading disability during the elementary school years and beyond (Bishop & Adams, 1990; Roth, Speece, Cooper, & de la Paz, 1996). Preschool children with particularly low language skills may be at a disadvantage for code-related learning, perhaps because children's language

inhibits engagement with and full participation in literacy activities (Cabell et al., 2011). Particularly high language ability may be an enabling influence for code-related development (Cabell et al., 2011). Children who are able to understand linguistic concepts and who can actively participate in conversations surrounding literacy may consequently be able to attend to and learn from literacy activities with higher engagement than their peers. In addition, these children, due to their advantaged language, may routinely elicit more information from adults and capitalize on learning opportunities.

A variety of oral language skills during the preschool period have been shown to contribute to a child's reading ability, including semantic (word knowledge, expressive and receptive vocabulary), syntactic (knowledge of word order and grammatical rules), and conceptual knowledge, as well as narrative discourse (the ability to construct an original story and retell a recently heard story) (Storch & Whitehurst, 2002). Dickinson et al. (2003) found that receptive vocabulary, phonological awareness, and early print awareness were intercorrelated skills for four-year old children. In addition, they found that vocabulary accounted for the same amount of unique variance as phonological sensitivity (the ability to segment words and sentences; and rhyming skill) to early reading, which suggests that, along with phonological awareness, oral language is an important contribution to a child's emergent literacy knowledge.

Oral discourse also has been shown to be important for the development of reading skills. Oral discourse skills at an early age (5 years old) are predictive of later reading comprehension and written narrative skills at 8 years old (Griffin, Hemphill, Camp, & Wolf, 2004). There are two forms of oral discourse: contextualized and

decontextualized (Curenton, Craig, & Flanigan, 2008). Contextualized discourse is used to talk about situations and objects that are part of the immediate context, whereas decontextualized language is used to talk about the past or future and to share information about abstract objects and events that are not part of the present environment.

Decontextualized discourse sets the foundation for school achievement and literacy because it promotes higher order thinking, such as reminiscing and planning, and requires children to use their imagination and memory to think about abstract ideas that are outside their immediate environment (Curenton et al., 2008). Book reading is considered an early decontextualized language activity. Book reading between adults and children provide a rich lexicon, complicated syntax, and a narrative structure (e.g., the story background and plot) that may encourage adults to ask questions regarding the relationships between characters or to encourage children to predict what will happen next in the story (Korat, 2009). Watson and Shapiro (1988) conducted a one-year longitudinal study of a sample of 20 preschoolers that examined the relationship between parent-child discourse and book reading and the child's subsequent performance on a range of pre-literacy skills and school-related tasks. When the children were 2 ½ years old, their parents were video recorded during two book reading sessions (with three different books) with their children. The children were tested separately on vocabulary skills, written language, and concepts about print. They found specific correlational links between the semantic aspects of parental book reading and the lexical-semantic development of their children such as vocabulary knowledge and children's early concept of print.

Other researchers lend further support that children's skill with spoken language plays an essential role in reading development during the early stages of reading acquisition. Storch and Whitehurst (2002) conducted a longitudinal study of 626 children from Head Start through fourth grade. They divided the children's battery of emergent literacy measures into two domains—code related skills and oral language skills—on the basis that these two domains may be strongly related to reading development at different points in the process of reading acquisition. Print awareness, emergent writing, alphabet names, sound knowledge, and phonological sensitivity comprised the code-related domains. The oral language domain comprised of measures of receptive vocabulary, expressive vocabulary, narrative skills, basic concepts, and word structure. These researchers separated oral language from phonological awareness because, they argued, the domain of oral language does not have a homogenous effect on reading acquisition; rather, factors such as phonological awareness have the greatest impact early in the development of reading, whereas other linguistic factors, such as understanding narrative discourse, have their greatest impact later for reading development. Storch and Whitehurst (2002) found several key findings through their structural equation model analysis: (a) there is a strong relationship between the two domains of emergent literacy skills (code related skills and oral language skills) during the preschool period; (b) there is a high degree of continuity over time of both code-related and oral language abilities (in grades one and two, the relationship between oral language and reading ability is non-significant, but code-related skills maintain a strong and direct influence on reading achievement); (c) during early elementary school (grades one and two), reading ability is predominately determined by the level of print knowledge and phonological awareness a



child brings from kindergarten; and (d) later in elementary school (third and fourth grade), reading accuracy and reading comprehension appear to be two separate abilities that are influenced by different sets of skills. Reading accuracy is heavily influenced by prior word recognition and decoding abilities whereas reading comprehension is influenced by prior reading ability, current reading accuracy and language ability. In sum, the model provides evidence that code-related skills and oral language skills contribute at different points during the development of reading ability.

A study by the National Institute of Child Health and Human Development Early Child Care Research Network (NICHD-ECCRN, 2005) also studied the relationship between oral language and reading achievement. The NICHD-ECCRN study included measures of broad oral language assessments, including measures such as language processing skills of syntax, morphology, communication ability, and vocabulary assessment. Their study spanned 1,137 geographically, ethnically, and economically diverse children ranging from age 3 years to 3rd grade. They assessed oral language ability when children were only 36 months of age – well before most children have developed any functional levels of phonological awareness. They found that early comprehensive oral language skills at age 3 were directly related to comprehensive language, vocabulary, and code-related skills knowledge at 54 months of age. In contrast to Storch and Whitehurst (2002) who found that oral language was indirectly related to reading achievement, the NICHD (2005) discovered that comprehensive oral language skills (not just vocabulary) are both directly and indirectly related to first-grade word recognition and third grade reading comprehension. Even though comprehensive language ability was highly correlated with concurrent vocabulary, the broad language

measures used added unique variance to the prediction of prereading scores and reading comprehension scores. The NICHD-ECCRN study also found a direct link between oral skills and first-grade reading skills that does not pass solely through code skills. Along with coding skills, oral language is not only important for building preliteracy skills such as phonological awareness and letter word skills but also makes a unique contribution to concurrent reading achievement and later reading achievement. Broad language skills are more predictive of concurrent preschool coding skills and reading achievement in first and third grade than vocabulary skills alone. This was found to be true for children from both the higher and lower SES groups.

A possible reason for different findings between the Storch and Whitehurst (2002) study and the NICHD (2005) study could be related to how oral language was measured. In Storch and Whitehurst's (2002) study, they measured oral language by a receptive vocabulary, an expressive vocabulary, and a story-retelling task. By third grade, they measured oral language exclusively by the receptive language task. NICHD-ECCRN's study included both broad-based oral language skills (language processing skills of syntax, morphology, and communication ability) and vocabulary assessment. It stands to reason that in the Storch and Whitehurst (2002) study, vocabulary knowledge would not predict later reading comprehension, but would be related to phonological awareness because past research has demonstrated the correlations between vocabulary size and phonological awareness (Goswami, 2001). In NICHD ECCRN's study, it makes sense that when they measured oral language with broader oral language tasks that included semantics, this focus on meaning would predict later reading comprehension. Nevertheless, Storch and Whitehurst's (2002) and NICHD (2005) agree that oral-

language skills and emergent literacy are both related and important for the development of reading for young children. How oral language is defined and measured by investigators has led to different conclusions in research on the relationship between oral language and reading achievement.

The variation in outcome measures used by researchers to assess reading achievement presents an additional problem in determining the relationship between oral language abilities and reading achievement. For example, a study by Gillon and Dodd (1994) demonstrated that the relationship between phonological abilities, syntactic and semantic skills, and reading performance depends on whether the outcome measure is reading accuracy or reading comprehension. The next section will detail how phonological awareness skills are related to emergent literacy and oral language skills.

### **Phonological awareness**

Phonological awareness involves the detection and manipulation of sounds at three levels of sound structure: (1) syllables, (2) onsets and rimes, and (3) phonemes. The terms *phonemic awareness* and *phonics* are often used interchangeably with phonological awareness. However, these terms have different meanings. Phonemic awareness is a subset of phonological awareness that focuses specifically on recognizing and manipulating phonemes, the smallest units of sound. Phonics requires students to know and match letters or letter patterns with sounds, learn the rules of spelling, and use this information to decode (read) and encode (write) words. Phonological awareness relates only to speech sounds, not to alphabet letters, so it is not necessary for students to have alphabet knowledge in order to develop a basic phonological awareness of language.

Phonological awareness is important for reading development. Previous research has demonstrated that children need to have considerable knowledge of phonology, vocabulary, syntax, discourse, and pragmatics prior to developing literacy skills (Snow et al., 1998). Phonological awareness such as phonological segmentation ability is one of the strongest predictors of success in learning to read (Muter & Diethelm, 2001). Considerable evidence points to a relationship between phonological awareness and subsequent reading. In a longitudinal project, Lonigan, Burgess, Anthony, and Barker (1998) studied the relation in low to middle-income 2- to 5-year-old children's phonological sensitivity to early reading. They administered a battery of measures of phonological sensitivity and oral-language measures of vocabulary and grammatical knowledge. Among the older children, they reported significant correlations between oral-language and phonological sensitivity measures. Foy and Mann (2003) found that phoneme awareness appears to be closely linked to instructional aspects of the home literacy environments that operate primarily by enhancing vocabulary and letter knowledge. Phoneme awareness is also increased by parental teaching and by TV and computer activities that build on these early reading skills.

Currently, there have been proposed two different hypotheses about the relations among oral-language, phonological awareness, and literacy skills (Dickinson et al., 2003). The first hypothesis, termed the phonological sensitivity approach (PSA) posits that vocabulary provides the basis for phonological sensitivity, which is the key language skill that supports reading development. This hypotheses draws on the research of Lonigan et al. (2000). Using two samples of preschool children, Lonigan et al. (2000) developed models for the interrelationships among measures of phonological sensitivity,

oral language, and nonverbal intelligence. Oral language included measures of receptive and expressive vocabulary, sentence production, and grammar for the younger children (mean age=41 months) and grammatical production only for older children (mean age=60 months). The younger sample was tested at two different times, but the oral language measures were not administered the second assessment time. For this group, three factors accounted for children's test performance: phonological sensitivity, oral language, and nonverbal IQ, with evidence of significant overlap between oral language and phonological sensitivity factors. The researchers found that oral language and phonological sensitivity related to children's phonological awareness and literacy skills 18 months later. Lonigan et al. (2000) found that the preschool measures of phonological sensitivity and letter knowledge significantly predicted decoding at age six after controlling for grammatical sensitivity. However, even though this result demonstrates the importance of phonological awareness, by testing oral language at only one point in time and by using a restricted range of measures of oral language, the research method limited the possibility of finding contributions of oral language. Dickinson et al. (2003) contends that studies of phonological awareness during the preschool years and early reading period have consistently found that phonological awareness plays an important role in predicting early decoding, but because of choices of research measures and analytic methods, they have not fully explored the potential enduring contribution of oral language to early decoding.

The second hypothesis, drawing on the research of Dickinson et al. (2003), is the comprehensive language approach (CLA). CLA posits that varied language skills interact with phonological awareness and print knowledge before children begin reading

instruction and continue to play a role in subsequent reading knowledge. Language, with vocabulary being a key element, plays a major role in supporting literacy initially and over time. Dickinson et al. (2003) argued that the CLA approach more accurately captures the relationship between language and literacy. They argue that most studies of early literacy during the preschool years have failed to fully examine the interrelationships among abilities and thus have underestimated the contribution of oral language to early reading. In their study of 533 Head Start preschool children, correlational analysis revealed that receptive vocabulary, phonological awareness, and early print awareness are all significantly interrelated. Further, a regression analysis revealed that vocabulary accounted for the same amount of unique variance as phonological sensitivity in predicting print awareness.

While phonological awareness skills may support a child's ability to decode print—clearly an essential part of reading—they do not necessarily ensure that the child actually comprehends the words on the page. Roth, Speece, and Cooper (2002) found, in a longitudinal study that spanned from kindergarten to second grade that phonological awareness skills measured in kindergarten predicted word and pseudoword reading in first and second grades, but they did not predict reading comprehension. Semantic abilities, as measured by word definitions and word retrieval, in combination with kindergarten print awareness, were most predictive of first and second grade reading comprehension. Narrative skills measured in kindergarten accounted for unique variance in reading comprehension in first grade but not second grade. Hatcher and Hume (1999) also found that verbal ability significantly predicted reading comprehension. Nation and Snowling (2000) similarly found that the phonological processing skills of readers with

poor comprehension skills were normal suggesting that poor comprehenders have problems processing grammatical and semantic aspects of language but not phonological processing skills. Attempts to improve parent–child interactions during reading sessions produced changes in preschool children’s general language skills but not in their phonological sensitivity (Lonigan and Whitehurst, 1998). Consequently, oral language ability contributes to early reading skills in ways other than through the influence of phonological awareness. These oral language abilities are clearly essential to understanding and using spoken language as well as written language.

In summary, oral-language skills and emergent literacy are both related and important for the development of reading for young children. Researchers have demonstrated that there is an established relationship among oral language, early print awareness, and phonological awareness. Phonological awareness is a set of skills that requires language knowledge, but when predicting literacy development, it contributes its own unique variance separate from oral language. Oral language, depending on how the construct is measured in the study, predicts comprehension either indirectly or directly. When the measures focus on the vocabulary aspect of oral language, researchers have shown that oral language operates through phonological awareness and print awareness to predict reading achievement. When oral language is broadly measured and the definition includes narrative discourse and semantics, the results suggest that oral language is directly linked to reading comprehension. Oral language is important for children to develop reading skills. Thus, in this study, oral language and phonological awareness were separated, because prior research suggests they affect the development of reading differently. In this study, oral language was assessed using a receptive

vocabulary measure and an oral expression task. The next section will detail how children develop oral language skills and emergent literacy skills.

### **Definition/Development of Oral Language and Emergent Literacy Skills**

#### **Children's Development of Oral Language Skills**

Neuroscience research suggests that the more a child is stimulated by linguistic input, the more the brain strengthens synaptic connections and axon myelination for language development (Johnson, 1998). Since this body of research implies that brain development is enhanced by increased linguistic input, linguistic interaction at an early age is important for cognitive development and acquisition of language. Although, oral language can be developed in a variety of contexts and situations, children must be exposed to certain language and print activities that focus their attention on the structural features of language for metalinguistic skills to develop (Burgess, 2002). These activities include rhyming and sound analysis games, letter games, and shared book reading.

Shared book reading, or storybook exposure, is likely the most studied aspect of oral language development. Evidence strongly suggests that shared book reading at home and in school is important for preschool children's development of the oral language skills required for reading ability. Dickinson and Tabors (1991) found that home reading activities and language experiences of preschool children were related to their verbal skills and literacy-related knowledge (e.g., print knowledge and narrative skills). Furthermore, frequency of story reading in the home and child engagement in a book at age 24 months were significant predictors of children's language ability at age 2 ½ and 4 ½ and knowledge of print conventions at age 4 ½ (Crain-Thoreson & Dale, 1992). In a sample of 87 primary caregivers and their 24-month-old children who had



developmental delays, Fletcher, Cross, Tanney, Schneider, and Finch (2008) discovered that children's expressive vocabulary at 24 months was related to reported frequency of caregivers' shared book reading at home. However, shared book reading experiences has had limited evidence for predicting phonological awareness knowledge later in kindergarten (Frijters, Barron, & Brunello, 2000).

How books are read to children also has shown an impact on oral language development. Children learn decontextualized talk from their mothers in story-telling contexts (Curenton et al., 2008). Caregivers' use of reading strategies such as questions, labeling, and expansion while reading was related to children's later language skills at 30 months (Fletcher et al., 2008). Haden, Reese, and Fivush (1996) found that mothers who devoted a larger portion of their time making print knowledge comments, interjected inferences and evaluations as well as linking the story to children's personal experiences had children who were more advanced with measures of receptive vocabulary, word recognition, and story comprehension than children of mothers who devoted most of the time describing the pictures and naming the characters in the book.

Discussion of vocabulary and conversation about the book while reading it to children can promote the development of language skills in young children. The inclusion of questions during shared book readings is beneficial to children who differ in word knowledge (Sénéchal, Thomas, & Monker, 1995). Children with greater word knowledge have more efficient memory processes than do children with less word knowledge, enabling them to learn more new words when listening to storybooks (Sénéchal et al., 1995). This is very critical because larger vocabularies allow children to make connections between novel labels and familiar concepts and may facilitate later

retrieval of newly acquired information. In addition, vocabulary skills are positively associated with decontextualized talk during shared book reading activities between children and adults (Hindman, Connor, Jewkes, & Morrison, 2008). Wasik and Bond (2001) evaluated the effects of a book reading technique called “interactive book reading” on the language and literacy development of 4-year-olds from low-income families. In that study, teachers read books to children and reinforced the vocabulary in the books by presenting concrete objects that represented the words and by providing children with multiple opportunities to use the book-related words. The teachers also were trained to ask open-ended questions and to engage children in activities and conversations about the book. This provided children with opportunities to use language and learn vocabulary in a meaningful context. Children in the interactive book reading intervention group scored significantly better than children in the comparison group on the Peabody Picture Vocabulary Test-III and other measures of receptive and expressive language. Early vocabulary development is important for the continual development of oral language skills.

Evans and Shaw (2008), in their review of experimental studies of shared book reading and vocabulary development, discovered that when the characteristics of experimental studies showing gains in vocabulary from story book reading were examined, some combination of the following is found: (a) the same books were read at least three times; (b) there were multiple occurrences of each novel word in the text; (c) the novel words were clearly illustrated by pictures and specifically pointed to by the reader; (d) the novel words were important to the text; (e) their meaning was clear from the context, picture, or adult’s explanation; (f) they were largely nouns; (g) the child was

asked to repeat the words, retell the story, and/or engage in activities related to the words' meanings. Under some combination of the above, about 20% of the novel words in storybooks were learned. These features, then, are good guidelines for parents to follow in tailoring shared book reading to maximize this activity's benefit on vocabulary development.

As language develops due to shared book reading, children's interest in books grows, thereby promoting linguistic exchanges with their caregivers that further refine word knowledge, syntax, and other aspects of language (Mol & Bus, 2011). Furthermore, starting to share books early is likely to optimize the quality of reading in the long term, as frequent reading interactions may have the capacity to extend parents' knowledge of and sensitivity toward their children's linguistic and cognitive competencies. Such sensitive, high-quality interactions are likely to make reading more enjoyable for parent and child and to lead to an increase in reading frequency, thereby increasing the likelihood for learning new language and expanding comprehension skills (Bus & van IJzendoorn, 1988). Future research exploring specific links between child skills and adult practices can help parents and teachers tailor book reading, and instruction more generally, to optimize children's early literacy learning at home and in school. The next sections explore what early literacy variables constitute emergent literacy (i.e. alphabet knowledge and print awareness) and how these skills develop in children before the onset of formal schooling.

### **Alphabet Knowledge**

There is evidence that increased exposure to letter names and sounds predict children's knowledge of other emergent literacy skills. For example, Crain-Thoreson and

Dale (1992) selected twenty-five children, who had verbal precocity skills at 20 months of age, for a longitudinal study investigating predictors of later language and literacy skills. Exposure to instruction in letter names and sounds significantly predicted children's knowledge of print conventions, invented spelling, and phonological awareness at age 4 ½. Children's literacy skills can be improved at a young age by increasing exposure to letter names and sounds.

There are mixed results about shared book reading promoting the development of children's letter naming knowledge. Some evidence supports that interactive behaviors (i.e. asking open-ended questions, following children's answers with questions, repeating and expanding what the child says, giving praise and feedback, following the children's lead and interests') when reading stories to at-risk preschool children has shown improvements of those children's sounds and letter knowledge (Justice & Pullen, 2003). Frijters, Barron, and Brunello (2000) found that shared reading experiences combined with other facets of home literacy environment (including parental knowledge of children's literature) also accounted for significant variance in letter-sound knowledge and vocabulary.

However, the results are mixed about how much alphabet knowledge children gain during shared book reading activities. Several studies failed to find significant relationships between adult-child reading and children's letter knowledge (Evans, Shaw, & Bell, 2000; Horner, 2004; Justice & Ezell, 2002; Sénéchal & LeFevre, 2002; Sénéchal, LeFevre, Thomas, & Daley, 1998). The results of these studies highlight the need for more research on how children learn letter names.

## **Print Awareness**

There is evidence that the role of the environment is important in the development of emergent literacy in young children. Important discoveries about literacy are thought to occur through children's observations of and interactions with print in environmental contexts (Neuman, & Roskos, 1993). Print awareness represents young children's abilities to interact with and think about written language, which leads to an understanding of both the form and function of print (i.e. differentiating pictures from letters, identifying the printed title of a book, and knowledge of letter names). Emergent literacy research supports that print awareness may be a distinct skill from oral language and metalinguistic skills (Sénéchal et al., 2001).

Differentiating print awareness, oral language, and metalinguistic skills has two important advantages. First, it encourages researchers to describe the nature of the relations among these different behaviors and such descriptions will lead to more precise theoretical models of the links among print awareness, language, and metalinguistic skills. Second, understanding how different literacy experiences affect the development of different child behaviors is crucial to the design of appropriate interventions designed for children at-risk for reading difficulties or delays.

When family members read stories frequently and provide responses to the child's questions in relation to the story, children learn that print communicates meaning (Saracho, 2002). Interactive behaviors (i.e. asking open-ended questions, following children's answers with questions, repeating and expanding what the child says, giving praise and feedback, following the children's lead and interests, asking questions about the print, making comments about print, pose requests about print, point to print when

talking about the story, track the print when reading) when reading stories to at-risk preschool children has shown improvements of those children's emergent literacy skills (vocabulary development, sounds and letter knowledge, print awareness, and beginning writing) (Justice & Pullen, 2003). Justice and Ezell (2002) trained parents to engage in more print referencing behaviors (verbal and nonverbal cues to encourage children's attention to and interactions with print) during shared book reading and found that after controlling for children's expressive vocabulary, children's print awareness and knowledge of print and book conventions improved. Ezell, Gonzales, and Randolph (2000)'s study of 48 migrant Mexican American preschoolers found that children's print concepts were significantly correlated with the amount of reading material in the home. The researchers examined the influence of the home and the Head Start literacy environments on children's emergent literacy skills. The results suggests that although both environments contributed to children's performance, it was the conditions in the home rather than at the Head Start center that accounted for better performance with print awareness measures.

**Writing:** In Whitehurst and Lonigan's (1998) model of emergent literacy, writing is considered an important emergent literacy skill. Reading has received more attention than writing in research. Both rely on a great deal of the same underlying knowledge (e.g. an understanding of the relationship between letters and sounds). Preschool children's name writing representations predicted their alphabet knowledge and print knowledge but not phonological awareness (Welsch, Sullivan, & Justice, 2003). In a study of 259 kindergarten children and their parents who were followed longitudinally to first grade, it was found that children's conceptual understanding (e.g. knowledge of the

functions of print) predicted early spelling, but that storytelling ability does not (Pinto, Bigozzi, Gamannossi, & Vezzani, 2009). These studies suggest that the accuracy of children's name writing and spelling abilities reflects their general knowledge about print and sounds. However, preschoolers' name writing representations reflect their more general knowledge about alphabet and print concepts while providing little information about phonological awareness.

Niessen, Strattman, and Scudder (2011) investigated whether tests of phonological sensitivity, print awareness, or word awareness accounted for a significant amount of variability in 40 4-year-old children's invented spellings. Invented spelling is an act that young children often engage in prior to any formal reading or writing instruction. In this study, word awareness is the ability to understand that the grapheme to phoneme relationships is dependent on the awareness that spoken language is comprised of words. For example, young children being able to distinguish one word from a sentence or being able to count the words in a sentence. The children were tested with the following measures: (a) alphabet knowledge tasks, (b) PPVT-III, (c) invented spelling task, (d) two word awareness tasks, (e) print awareness, and (f) phonological sensitivity tasks (i.e. rhyme, beginning sounds, and deletion). Stepwise multiple regressions were used to determine the unique variance of each of the predictor variable: (a) phonological sensitivity, (b) print awareness, and (c) word awareness for the criterion variable—invented spelling. A full model regression analysis also was conducted to determine whether any additional variance was predicted. The results revealed that invented spelling skills were significantly related to each of the three predictor variables. Of the relations among predictor variables, phonological sensitivity was significantly

related to both print awareness and word awareness. Word awareness accounted for the most variance in invented spelling performance. Print awareness also contributed to a significant amount of variance; however, phonological sensitivity did not. It is important for young children to possess an understanding that spoken language is comprised of words represented by print. Word awareness and alphabet knowledge may be prerequisites of phonemic awareness in predicting differences in the spelling of 4-year-olds. As children use invented spellings, they rely on their knowledge of print conventions, names of letters, and letter sounds. Continued research is needed regarding attention to word awareness and print awareness in emergent writing and spelling as important for sufficient understanding of preschool children's literacy development.

Research has shown that emergent literacy skills consist of vocabulary knowledge, phonological awareness, alphabet and sound knowledge, print awareness, and early attempts at writing. These emergent literacy skills can be developed by early exposure to shared book reading. If young children possess these literacy skills before the onset of formal schooling, do they attain greater success in becoming successful readers compared to children who did not have the same amount of early exposure?

### **Emergent Literacy Skills as Predictors of Later Reading Development**

Research detailed from the prior section suggest that exposure to books develops emergent literacy skills. Research also does seem to support emergent literacy skills such as alphabet knowledge, vocabulary, and writing skills are predictors of later reading development (Weinberger, 1996). For example, McCormick, Stoner, and Duncan (1994) followed thirty-eight children in kindergarten into first grade on a number of measures. Each child was tested with uppercase and lowercase letter-identification tasks and sound



awareness tasks (e.g. identify beginning sounds of words) throughout their kindergarten year and first grade. McCormick et al. (1994) found that lowercase letter-identification at the beginning of kindergarten and consonant-identification in midyear kindergarten was significantly positively correlated with first grade reading achievement. They also found from multiple regression analysis that consonant-identification and vocabulary knowledge best predicted later reading knowledge.

Emergent literacy skills are very important predictors of later reading comprehension. While decoding and phonics are important areas for emergent literacy researchers, the significance of these skills peaks at early stages of reading acquisition and is later subsumed under more sophisticated word reading and vocabulary skills (Paris, 2005). Sénéchal and LeFevre (2002) found that parents teaching preschool children about reading and writing words is related to their development of early literacy skills (print awareness, alphabet knowledge, decoding, and invented spelling) at the end of first grade and reading comprehension in third grade. Mason, Stewart, Peterman, and Dunning's (1992) four year longitudinal study of 127 children from kindergarten through third grade that examined contributions of early language ability and emergent literacy on children's later decoding and comprehension ability found three main findings. Those findings are: a) individual differences in decoding ability have little effect on children's reading comprehension and vice versa; b) early language understanding predicts reading comprehension; c) emerging knowledge about reading predicts subsequent decoding ability.

Manz, Hughes, Barnabas, Bracaliello, and Ginsburg-Block (2010) found in their meta-analysis that although the emergent literacy literature base of 31 studies provides a

solid foundation from which family-based, emergent literacy interventions can advance, its production of empirically supported interventions for low-income, ethnic minority or linguistically-diverse families of young children is limited. In addition, many studies that have examined children's emergent literacy development who are not from a middle class Caucasian background actually took place in different countries than the United States (Strasser & Lissi, 2009) and therefore those studies may not be generalized to the United States.

In conclusion, emergent literacy skills can be developed in a variety of contexts and situations. However, more research needs to be done with low-income, ethnic minority or linguistically diverse families of young children. Evidence strongly suggests that shared book reading at home and in school for preschool children is important for their development of the emergent literacy skills required for the eventual mastery of decoding and comprehension. The results of these studies about the development of emergent literacy skills (oral language, phonological awareness, alphabet knowledge, print awareness, and writing skills) indicate that storybook exposure promotes children's language growth, emergent literacy, and reading achievement. Reading aloud to children contributes to preschool aged children's vocabulary acquisition, oral language development, print awareness, and positive attitudes toward reading, which promote their acquisition of literacy. As family members read aloud to their children, they help the child acquire healthy reading behaviors and an appreciation for reading. During shared book reading, young children become aware of story structure, the language of stories, and the nature of reading behavior. They learn that print is read from left to right and that pictures often provide clues to the text. Book handling skills are also developed.

Research clearly has shown that young children must possess certain emergent literacy skills in order to become successful readers. Such skills include oral language abilities, phonological processing skills, alphabet knowledge, and print awareness. How can parents enhance the development of these skills?

### **Home Literacy Environment**

Adults can enrich the lives of their young children by addressing life experiences familiar to young children and building on the foundation of what children know. Research into the home literacy environment reveals that this environment is very important for children's reading development. Home problems that were identified at the beginning of kindergarten have a negative prediction on reading (Mason, Stewart, Peterman, & Dunning, 1992). There are different clusters of home literacy environments (HLE) that impact children's development of emergent literacy skills and oral language (Rodriguez & Tamis-LeMonda, 2011). These clusters differ on frequency of shared reading and literacy teaching activities and are related to socioeconomic status, to family living circumstances, caregiver stress, and caregiver reading ability (Phillips & Lonigan, 2009). In a study that compared different conceptualizations of the HLE, Burgess, Hecht, and Lonigan (2002) found that the HLE aspects that were characterized as active were more likely to be significantly statistically related to emergent literacy skill development. The active HLE conceptualization included parental efforts that directly engaged the child in literacy activities (e.g. rhyming, games, shared reading) designed to foster literacy or language development. These active home literacy environments accounted for 12% of child language after the effects of caregiver IQ and education were controlled in a hierarchical regression analysis (Payne, Whitehurst, & Angell, 1994).

There are many facets of the preschool home literacy environment that leads to the development of decoding and comprehension skills. One facet is the literacy opportunity, which refers to the degree to which the home environment provides possibilities for interaction with literacy (De Jong & Leseman, 2001). The second facet is the quality of parental guidance during literacy interactions with their children (De Jong & Leseman, 2001). De Jong and Leseman (2001) conducted a longitudinal study that examined the influence of the pre-school home literacy environment on the development of reading, word decoding, and reading comprehension through first and third grade in a sample of Dutch, Surinamese-Dutch, and Turkish-Dutch children. They discovered that the relationship of the HLE to word decoding and reading comprehension changed differentially over time. For word decoding, there was an overall decline in the size of its relationships with the home literacy environment from the end of first grade to the end of third grade. The preschool HLE did not have further effects on the development of word decoding after the first year of instruction. The associations found in first grade among word decoding, vocabulary knowledge, and listening comprehension could explain the remaining relationship with word decoding in third grade. The influence of the HLE on the development of word decoding skills appeared to be limited to the initial stages of learning to read. In contrast, the relationship of the home environment concerning instruction and the social-emotional quality facets with reading comprehension increased from first to third grade. The home measures remained to have an effect on third-grade reading comprehension after first-grade word-decoding ability and reading comprehension were controlled.

Three related aspects of the home environment have been discussed in the literature relating HLE to reading achievement and to language skills known to support reading. These include parental beliefs about literacy, shared reading experiences between the parents and children, and parental literacy activities.

### **Impact of Parental Beliefs**

Research on parents' literacy beliefs suggests that parents have differing views about children's early literacy development and that these beliefs are related to home literacy practices. For example, Weigel, Martin, and Bennett (2006b) investigated the literacy beliefs of parents of pre-school aged children and examined how those beliefs were related to aspects of the home literacy environment and to children's emergent literacy skills. They found two profiles of parental literacy beliefs. The first profile, labeled facilitative, included mothers who believed in taking an active role in teaching and reading to their preschool aged children. They believed that providing their children with learning opportunities would later help them in school. They also believed that children could learn general knowledge and specific skills through reading books. These parents enjoyed reading to their children and their children enjoyed having books read to them too. These mothers tended to have higher education levels and read more than other profiles of parents. Facilitative mothers took a more active role in their child's education and consequently their children displayed more advanced print awareness and more interest in reading. The second profile of parents, labeled conventional, described mothers who believed that they could do little to prepare their children for school, and that the school system rather than parents are responsible for teaching their children. This group of parents reported numerous challenges with reading to their children, such

as resources, space, and time. They also reported that reading was difficult with their children.

A pivotal study by DeBaryshe (1995) examined 60 low-income families and 56 working-class families' maternal beliefs about reading aloud to their children. Measures included two surveys given to the mothers, measures of children's language skills, and audiotaped samples of parent-child book reading. DeBaryshe found that parents who hold strong beliefs about the importance of early literacy exposure tend to practice what they preach, engaging in shared reading practices that are broader, more frequent, and more interactive than children with parents who hold less strong beliefs. DeBaryshe did not find an effect of reading aloud on the development of oral language skills. This may be because very few mothers asked open-ended questions or asked higher-level thinking questions. These mothers did not use some of the strategies that have been linked to children's oral language development. Although interest in books was strongly correlated with facilitative mother reading practices, the study found inconsistent support that facilitative reading practices increased motivation.

Individual differences in parental literacy beliefs have consequences for what children do and what children learn. Parental beliefs about literacy influence their own behavior in how they help their children learn to read and write. Parents identified as holding more holistic beliefs about reading development (i.e. emphasized their knowledge of the world in relation to the context of the passage and focused on meaning) were more likely to encourage their child's literacy development through a variety of methods than those parents with more skills-oriented beliefs who were more likely to engage in the direct teaching of literacy skills through workbooks or rote memorization

of words and did not focus on reading stories to their children (Lynch, Anderson, Anderson, & Shapiro, 2006). DeBaryshe, Binder, and Buell (2000) found that parents whom had knowledge or literacy beliefs that were aligned with whole language approaches (i.e. meaning-orientated) experienced more frequent modeling of reading and more frequent mother-child writing episodes. These children also wrote more frequently. Children of mothers who endorsed a more phonics (i.e. code-orientated) approaches had children who had more developed early literacy skills in the areas of vocabulary development, story grammar, and conventionalized reading and writing skills. Mothers who did not endorse either code-or meaning-based strategies showed the least developed literacy skill. Parents who endorsed both beliefs endorsed optimal practice according to DeBaryshe et al. (2000).

These studies provide support for the notion that the beliefs parents have about how children learn to read are related to the approach they take to teaching their children to read. These beliefs have later consequences for children's literacy success.

### **Shared Book Reading**

Typically, 43% to 75% of preschoolers are read to on a daily basis or more (Scarborough & Dobrich, 1994). In Scarborough and Dobrich's (1994) database of 659 parents mainly from Southwestern Ontario, 72% of parents reported reading five or more days a week to their child. Dickinson and Tabors (2001) reported that in low-income families in the United States, about half of children under age 4 are read to daily. While reading, parents and teachers overwhelmingly focus their book-related talk on meaning-related rather than code-related information (Hindman, Connor, Jewkes, & Morrison, 2008).

Correlational research suggests that broad exposure to book reading throughout the preschool years is associated with stronger print awareness, later reading comprehension (DeBaryshe, 1993) and oral language skills such as vocabulary knowledge, listening comprehension, and phonological awareness (Sénéchal et al., 1998). Children who are exposed to books and reading in the preschool years have better reading outcomes in later grades than children who were not exposed to reading at an early age. Children who were poor readers entering school had accumulated substantially less experience with books and reading than those who became better readers (Scarborough, Dobrich, & Hager, 1991). Weinberger (1996) found that children who had the least experience with books at age three (without favorite books, not having access to library books, and not being read to from storybooks), fared less well than other children with reading at age 7.

Bus, de Jong, and Van Ijzendoorn's (2007) review of studies between 1950 and 1994 found several studies supporting the positive effects of shared book reading on later development of literacy and reading performance in school. The classic meta-analysis conducted by Bus, van Ijzendoorn, and Pellegrini (1995) of caregiver-child book reading from the period of 1951 through 1993 demonstrated that the frequency of caregiver-child book reading bolstered children's acquisition of oral language and emergent literacy skills as well as overall reading achievement. Outcomes of the Bus et al.'s (1995) meta-analysis indicate that 64% of the children who are read to by their caregiver become more proficient readers when school age compared with only 36% of children who are not exposed to books. This meta-analytic evidence is based not only on correlational studies but also on experimental and longitudinal research that allows for stronger causal



inference. Additionally, the findings from their analysis reinforced the particular advantage of intervening early to achieve the greatest outcomes. A key finding from this meta-analysis; however, was the conclusion that caregiver-child book reading appeared to be equally effective despite families' socioeconomic status. Reading frequently to children at an early age appears to make a significant contribution to oral language and emergent literacy. Book reading provides an optimal context for learning language and developing emergent literacy skills. In view of these findings, it is important to explore whether and how shared book reading between caregivers and children predicts and supports the development of emergent literacy skills.

Research examining the quality of parent-preschooler interactions during shared book reading may shed light on how shared book reading supports the development of emergent literacy outcomes. Flood (1977) investigated the relationship between a parent's style of reading to young children and the child's performance on prereading related tasks. This study involved tape-recording 36 (age 3 ½ to 4 ½ years old) preschool children and their parents reading together at home. The sample was balanced for ethnicity and SES. The recordings were analyzed to determine which characteristics predict reading success for children. Flood reported that the best predictors of success on the tasks were: (a) the number of questions answered by the child, (b) the number of words spoken by the child, (c) the number of warm-up preparatory questions asked by the parent, (d) the number of questions asked by the child, (e) the existence of postevaluative questions posed by the parent, and (f) the amount of positive reinforcement by the adults. As a result of these findings, Flood concluded that parent-child story reading sessions need to consist of (1) questions prior to reading to prepare the children for the story; (2)

verbal interactions between the adults and the children that relate the story to experiences familiar to the child, (e.g., asking questions, relating content to present and past experiences); (3) questions presented after the story that elicit evaluative responses from the children for they help children learn to assess, evaluate, and integrate, and (4) positive reinforcement of the children's responses. Research into the quality of shared book reading interactions has led to a large research base known as "dialogic reading" (Lonigan & Whitehurst, 1998).

**Dialogic Reading:** Parents may frequently engage in shared book reading with their children because they may believe that the experience will foster their children's literacy development. During parent – child shared reading, parents often do not draw the children's attention to features of the print or provide feedback so the children most often will attend to the illustrations and not to the print (Phillips, Norris, & Anderson, 2008; Stoltz & Fischel, 2003). Consequently, shared book reading often does not advance children's early literacy development (Phillips, Norris, & Anderson, 2008). The quality of the parent-child interactions in story reading tends to influence the children's learning, their attitudes toward reading, and the development of emergent literacy skills (Teale & Sulzby, 1987). When shared book reading is enriched with explicit attention to the development of children's reading skills and strategies, then shared book reading is an effective vehicle for promoting early literacy skills (Phillips, Norris, & Anderson, 2008).

Unlike conventional reading in which the adult reads the text and occasionally asks for contributions from the child, dialogic reading is highly interactive. Dialogic reading refers to interactive behaviors during storybook reading with young children. These interactive behaviors include asking open-ended questions while limiting the use

of yes/no questions; following children's answers with additional questions; repeating and expanding on what children say; offering praise, encouragement, and feedback for participation; and following children's interest. A research base has indicated the likely benefits of dialogic reading for supporting young children's oral language (Justice & Pullen, 2003; Van Kleeck, Gillam, Hamilton, & McGrath, 1997; Whitehurst & Lonigan, 1998) and emergent literacy achievements (Justice & Pullen, 2003; Whitehurst & Lonigan, 1998).

Interventions aimed at making shared book reading sessions more beneficial have improved children's general language skills. Preschoolers who observed a model asking questions during shared book reading sessions learned to ask more questions about the letters or pictures than children who did not observe a model (Horner, 2004). Reese, Sparks, and Leyva (2010) reviewed parent intervention studies that focused on improving the language and literacy skills of preschool/kindergarten aged children. They focused on typically developing children from a range of different SES backgrounds. The criteria for reviewing the studies were the following: (1) the study had to be experimental in nature (i.e. it had to contain treatment and control groups), (2) the study included a direct parent-training component, (3) the study focused on parents of preschool or kindergarten children who were not receiving formal reading instruction, and (4) the parent training attempted to improve children's language and/or emergent literacy. Reese et al. (2010) divided their review into three types of interventions. The first and most common intervention revolved around teaching parents to read storybooks to children as a way to enhance their language and literacy. The second context for intervention was parent-child conversations as a springboard for children's language and narrative development.

The third type of intervention focused on parents' assistance for children's writing as another important component of emergent literacy. Parent conversational interventions are important because parents talk and tell stories in many other contexts besides shared book reading. Intervention studies that implemented parent training in shared book reading for the most part used a 'dialogic reading' program developed for preschoolers by Lonigan and Whitehurst (1998). Reese et al. (2010) found many studies that support the hypothesis that shared book-reading interventions that train parents to adopt dialogic reading techniques are an effective way to enhance children's expressive vocabulary, and in some studies, their receptive vocabulary. Reese et al. (2010) found that very few studies with shared-book reading addressed children's narrative development. They also concluded that future studies of dialogic reading should also include more complex measures of language as well as tests of expressive and receptive vocabulary. They concluded that all types of parent-training programs—shared book reading, conversation, and writing interactions—are effective ways to improve the language and emergent literacy skills of preschool children. However, the skills enhanced are often specific to the training that the parents received. Parents that encouraged their children to talk about the pictures in a book enhanced their children's vocabulary skills. Parents that encouraged their children to tell richer stories of their own led to improved children's narrative skill. Parents that focused on teaching print improved their children's emergent writing skills.

Teaching families dialogic reading techniques is an effective intervention that stays with families even after the initial intervention is complete. Parents taught to use dialogic reading behaviors when their children were ages 2 or 3 years continued to use

this reading style more than two years later (Huebner & Payne, 2010) and the use of dialogic reading behaviors was associated with greater participation by the child in telling the story.

A metanalysis by Mol, Bus, De Jong, and Smeets (2008) indicate that much more research needs to be done with dialogic reading interventions. They reviewed 16 studies of dialogic reading that included outcome variables of expressive and or/receptive vocabulary and involved a (quasi) experimental design that included a control group in which parents were asked to read as usual to their children. They found that the dialogic reading interventions explained about eight percent of the variance in children's language skills and Cohen's *d* was .59, which is a moderate effect size in those studies that used expressive language as an outcome. They found that when focusing on measures of expressive vocabulary, dialogic reading accounted for only four percent of children's language skills when the language measures included receptive as well as expressive vocabulary. However, the effect size reduced substantially when children were older (4 to 5 years old) or when they were at risk for language and literacy impairments as defined by the demographic variables of income or maternal education. Their findings were consistent with an meta-analysis (Bus et al., 1995) and with a review (Scarborough & Dobrich, 1994) of primarily correlational research on the effects of picture book reading that reported that shared book reading accounted for eight percent of the variance in preschool children's language and literacy. More research needs to be done with dialogic reading interventions or the quality of parents/child reading interactions because this metanalysis included only a small set of studies and a moderate number of participants. Furthermore, many studies lacked control of what actually happened in the experimental

and control reading groups. Data describing the behavior of the control group and/or intervention group were often missing or scant.

The effects of parental intervention training may have more impact on the long term than the short term effects of their children's academic success. Drouin (2009) studied 77 preschool children in a two-year longitudinal study that examined the effects of parental involvement in an emergent literacy intervention. The children were divided in three groups (school intervention with parent and teacher training, school intervention with teacher training but no parent training, and a control group). At the end of four weeks, both intervention groups made equal and significant progress in letter identification and beginning sounds. However, in two years the children in the intervention group with teacher and parent training were significantly ahead of the intervention group without parent training on standardized measures of reading and spelling. Parents in the parent training group also reported greater involvement in ongoing home literacy activities as a result of the intervention.

In summary, it is important that parents stimulate active involvement during shared book reading by eliciting verbal responses to the story with the help of open-ended questions so children can actively participate. The quality of book reading is as important for language development and the development of emergent skills as is frequency of book reading.

### **Parental Literacy Activities**

In addition to storybook reading, other types of literacy activities at home are important to foster children's emergent literacy development. For example, having children copy messages on thank-you cards, or playing with plastic letters. Children with

parents who provide literacy materials and activities have significantly higher scores on literacy measures than children whose parents do not provide these experiences (Saracho, 2002).

Many researchers who examined the role of the home literacy environment in the development of children's literacy behaviors found that different types of activities at home differentially affected print awareness, oral language, and metalinguistic skills. Haney and Hill (2004) investigated the relationship between different types of parent reported teaching activities and the development of specific emergent literacy outcomes on forty-seven 3-to-5-year-old preschool children. The study considered the effects of parental teaching on three distinct emergent literacy skills. The emergent literacy skills assessed in this research included vocabulary, concepts of print, and beginning reading knowledge (including knowledge of letter names, letter sounds, and reading two or three letter words). Results found that parent reports of engaging in some form of teaching of literacy activities were related to higher scores in all literacy areas including vocabulary, beginning reading skills (alphabet knowledge and two or three letter words), and concepts about print. Children who received some type of parental teaching of literacy skills consistently demonstrated higher scores on all early literacy skills measured. They also found that children receiving instruction in writing words scored significantly higher on the measure of alphabet knowledge and beginning decoding skills than those children not receiving such instruction. A more puzzling finding was the association between teaching letter sounds and significantly higher vocabulary scores. In interpreting these results, it is important to note that over one-half of the parents participating in this study reported teaching their child letter sounds. Thus, many parents who engaged in a variety

of literacy teaching activities taught this specific skill to their children. As a result, there is a considerable amount of overlap between children who were not taught letter sounds and those who did not receive any form of literacy instruction. This finding may underscore the significant advantages young children exposed to literacy teaching activities in the home have over those without such experiences. Another interesting finding was that those children directly taught 'reading words' or 'reading stories' did not have significantly higher scores with alphabet knowledge. A lack of diversity in the sample limited the scope of this study. Participants were primarily Caucasian who attended a private preschool located on a college campus.

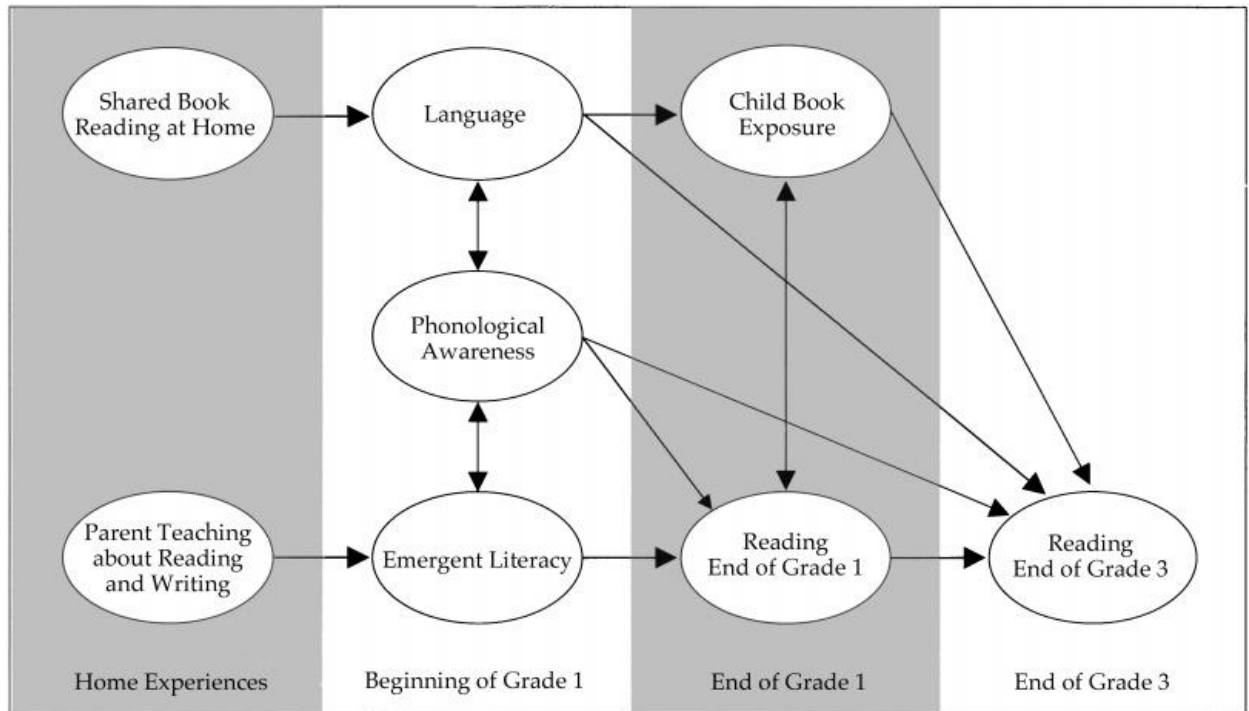
Using a factor score (emergent literacy variable) composed of alphabet knowledge, invented spelling, and decoding skills, Sénéchal and LeFevre (2001) also investigated the effects of different patterns of parental literacy activities on the development of emergent literacy skills. Parents of children in a 'high teach–low read' group reported frequently teaching literacy skills but infrequently engaging in book reading with their child, while parents of children in the 'low teach–high read' group reported infrequently teaching literacy skills but frequently engaging in book reading with their child. These two groups of children demonstrated different trajectories of reading skill development from grades one to three. For example, children in the high teach–low-read group performed better on achievement test scores at the beginning of first grade. However, this advantage disappeared by grade three, at which time children in the low teach–high read group outperformed those in the high teach–low read group. Children receiving high levels of both direct teaching from parents and frequent exposure to book reading outperformed all groups by grade three.



Based on a series of hierarchical regression analyses, Sénéchal and LeFevre (1998, 2002) proposed a model representing the relations among home literacy experiences (shared reading and parental teaching about reading and writing) and child outcomes in language, phonological awareness, emergent literacy (e.g., print concepts, letter knowledge), and reading (see Figure 1). Sénéchal and LeFevre (1998) theorized that children are exposed to two types of literacy experiences at home—informal and formal. Informal activities are those where the message is the meaning of the print. For example, when parents read a bedtime story to their children, they focus on the story, including both the vocabulary and illustrations in a book (Sénéchal, LeFevre, Thomas, & Daley, 1998). Parents may elaborate on the meaning of the story and the child may raise questions about the meaning of some words. In these interactions, the children are informally introduced to printed material. In formal activities, the parents and the children focus solely on the print mechanics. For example, the parents may emphasize the print in the book when they discuss the name and the sounds of specific letters. Sénéchal et al. (1998) conducted a study to differentiate informal and formal activities and their predictors on emergent literacy. They exposed children to storybooks to provide informal literacy activities. To examine formal literacy activities, they asked parents how often they taught their children about reading and writing words. Sénéchal et al. (1998) found that different types of literacy activities affected different child outcomes. In the one year study of 103 kindergarten children and 43 first grade children, they found—after controlling for parents' print exposure, children's age and intelligence results—that storybook exposure (informal) explained statistically significant unique variance in children's oral language skills (receptive language skills and listening

comprehension skills) but not in their print awareness; parental teaching (formal) explained statically significant unique variance in children's written-language skills but not their oral-language skills.

Figure 1 Adapted from Sénéchal & LeFevre (2002); Sénéchal et al. (1998)



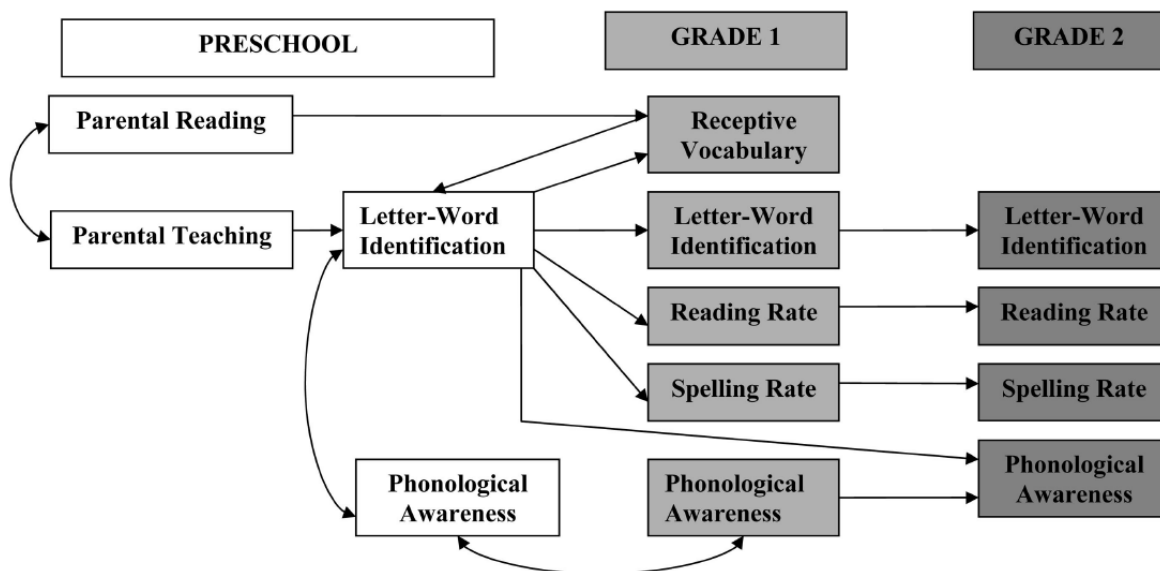
Sénéchal and LeFevre (2002) extended Sénéchal et al.'s (1998) research by analyzing phonological awareness separately from oral language. They found that parental teaching involvement was not directly related to children's phonological awareness skills. Phonological awareness was related to receptive language and early literacy skills. Receptive language skills of emergent literacy skills were not directly related to each other. Instead, receptive language skills and emergent literacy skills were linked through their separate relations with phonological awareness. Children's book exposure, phonological awareness, emergent literacy, and language skills all predicted

school age reading level. In contrast, Burgess (2002) found the composites of emergent literacy, oral language, and home literacy environment assessed a year earlier predicted phonological awareness at 5–6 years of age. Although the effect was rather small (4.3%), this finding is contrary to the suggestion (Sénéchal et al., 1998; Sénéchal & LeFevre, 2002) that the influence of the home literacy environment on phonological awareness development would be fully mediated by vocabulary development. This difference in results was most likely due to the differences in measures. For instance, in Sénéchal and LeFevre, what books parents recognized from lists of real and false titles and authors of children's books measured shared book reading, whereas in Burgess (2002) a composite of both limiting and supportive home literacy environmental factors gathered from a broad parent questionnaire composed of the shared book reading measure.

Interestingly, Sénéchal and LeFevre (2002) noted that the act of parents teaching children about reading and writing words was related to their development of early literacy skills (print awareness, alphabet knowledge, decoding, and invented spelling) at the end of first grade and reading comprehension in third grade. Sénéchal and LeFevre (2002) analyzed a sample of children already receiving reading instruction (e.g., kindergarteners and first graders); thus, the model cannot address the contributions by teachers, peers, or school–home interaction to the associations between home factors and child outcomes. These results are in contrast to Evans et al. (2000) who did not find that storybook reading exposure predicted the vocabulary of kindergarten children after controlling for parent education. The results may be due to Evans et al. (2000) using a single checklist measure to assess storybook exposure (titles of children's books) whereas Sénéchal and LeFevre (2002) used checklist measures (titles and authors used) and

reported parental frequency of reading to their children. A criticism of Sénéchal and colleagues research is that the sample size is of white middle class families and may not be generalized to the entire population.

Figure 2 Adapted from Hood, Conlon, and Andrews (2008)



Hood, Conlon, and Andrews (2008) conducted research that expanded the model proposed in Sénéchal et al. (1998), Sénéchal and LeFevre (2002), and Sénéchal (2006) (see figure 2). Hood et al. (2008) studied the direct and mediated paths between early home literacy environment, children's emergent literacy skills, and subsequent literacy and language skills in a 3-year longitudinal study (preschool to grade 2) using a different cultural and SES sample (an Australian low-to-middle class sample) than Sénéchal et al. (1998), Sénéchal and LeFevre (2002), and Sénéchal (2006). They also focused on predictors of single-word identification rather than comprehension because of the younger age of the sample. They hypothesized that shared book reading is directly related to the development of receptive vocabulary, and this relationship mediates any

relationship between parent-child reading and word reading accuracy and rate. Frequency of parental teaching was hypothesized to be related to preschool letter knowledge and preschool letter knowledge was hypothesized to mediate the relationship between parent-child reading and word reading accuracy and rate (age, IQ, and vocabulary were controlled). Frequency of parent-child reading was expected to be related to spelling skills and preschool letter knowledge was expected to mediate the relationship between storybook exposure and spelling skills. The sample comprised of 143 Australian preschool children ( $M=5.36$  years) who were largely from low-to-middle class Caucasian families. Results found that the parent-child reading and parental literacy practices showed different relationships to language and literacy outcomes with little shared variance extending Sénéchal and LeFevre's (2002) model to a different SES/culture and extending the model to include accuracy and rate of word reading as well as spelling rate. Parental teaching was directly related to their children's receptive vocabulary, independent of age, memory, nonverbal ability, and emergent literacy skills. In contrast, parental teaching was not related directly to vocabulary, but was directly related to preschool letter word identification. The relationship between parental teaching and letter-word identification was found to mediate the relationship between parental teaching and all later measures.

Whitehurst et al. (1994) found a similar pattern of results in a large-scale intervention study with children who were in a preschool setting, not in a formal school setting. For 4-year-old children, the teaching of letter and letter-sound knowledge at a Head Start center influenced early reading and writing development whereas the frequency of storybook reading by parents at home was related to gains in vocabulary at

the end of the children's Head Start center school year. These findings were maintained through the end of the kindergarten year (Whitehurst et al., 1999).

Stephenson, Parrila, Georgiou, and Kirby (2008) examined longitudinally the effects of 61 children's home literacy (direct teaching of literacy skills, reading to child, and number of books in the home), parents' beliefs, and expectations of their children's reading and academic ability, on emergent literacy skills and word reading. They hypothesized that parents' direct teaching would predict unique variance in letter knowledge. They also expected that parents' beliefs would predict word reading in kindergarten but not in Grade 1 after controlling for task-focused behavior. Final hypothesis projected that task-focused behavior would predict unique variance in Grade 1 word reading even after controlling for the kindergarten emergent literacy skills. After controlling for nonverbal IQ and vocabulary knowledge, direct teaching predicted letter knowledge reading in Grade 1, although in the case of word reading accuracy in Grade 1, it shared its predictive variance with children's task-focused behavior. It is not surprising that parents' reports of their children being directly taught letter names, sounds, and to read words did not significantly predict phonological sensitivity because parents were not asked about activities, such as rhyming, which would be expected to influence phonological sensitivity. Direct teaching also did not significantly predict word reading. An explanation for this is that parents' beliefs about their children's current reading and children's task-focused behaviors were more highly correlated with the reading measures than direct teaching so once they are accounted for direct teaching does not make a difference. The third home literacy factor, number of books in the home, correlated significantly with parents' reports of their children being taught letter names, sounds, and

to read words but not with any of the outcome measures. These analyses indicate that teaching activities that take place in the home before the child enters kindergarten are more important for the development of phonological sensitivity, letter knowledge, and word reading than the frequency of storybook exposure or the number of books at home. Their results are in agreement with Sénéchal and LeFevre (2002), who showed that parental teaching of literacy skills predicted significant variance in a combined written-language variable. Finally, parents' beliefs about their children's current reading ability predicted unique variance in phonological sensitivity and word identification in kindergarten after controlling for nonverbal IQ, vocabulary, and other significant predictor variables. Although parents' beliefs about their child's current reading correlated moderately with letter knowledge so did the other predictor variables, and once those variables were controlled, parents' beliefs about their child's current reading was no longer a significant predictor. Thus, parents' beliefs about their child's current reading shared its predictive variance with direct teaching and children's task-focused behavior. In conclusion, their results lead to two suggestions: parents should be encouraged to actively teach their children letter names, letter sounds, and words; and intervention research should develop programs that address children's task-focused behaviors as well as emergent literacy skills and should test the impact of the programs on reading skills.

Kim's (2009) study fills the gap on research regarding how home literacy practices are related to developmental trajectories of children's language and emergent literacy skills as well as conventional literacy skills. In addition, previous research has been limited to the linguistic and cultural contexts in North America. Kim's study fills

this gap in the literature by using a longitudinal design with four waves of data on Korean-speaking children and their families. This study expands on previous studies in two ways: (1) it investigated the relationship of home literacy practices to growth trajectories of important language and emergent literacy skills—defined as vocabulary, letter name knowledge, and phonological awareness— and three conventional literacy skills—word reading, pseudoword reading, and spelling; and (2) it examined a non-English speaking population, using data from Korean-speaking families. The study asked two questions. Do Korean children who are exposed to more frequent literacy activities at home tend to have a faster rate of change in their emergent literacy skills such as vocabulary, letter-name knowledge, and phonological awareness? The second question asked whether the two dimensions of home literacy practices are positively associated with the three conventional literacy skills in Korean (i.e., word reading, pseudoword reading, and spelling). The results showed that the reported frequencies of home reading and parental teaching were indeed related to children's emergent literacy skills. However, the direction of the relationships differed for home reading and parental teaching. The frequency of home reading was positively related to all the three emergent literacy skills indicating that children who were engaged in reading activities at home more frequently had higher average scores at the end of the study in their phonological awareness, letter-name knowledge, and vocabulary. The results remained unchanged whether or not researchers controlled parental teaching. In contrast, parental teaching was not related to any of the emergent literacy skills after controlling for background variables. However, when frequency of home reading was controlled for, the frequency of parental teaching was negatively related to children's phonological awareness skills



and vocabulary skills such that more frequent parental teaching was associated with lower scores at the end of the study in phonological awareness and vocabulary. The rate of change in the three emergent literacy outcomes did not differ as a function of the level of home reading and parental teaching—interactions between age and home reading and parental teaching were not statistically significant. The study revealed two dimensions of home literacy practices—home reading and parental teaching. Frequent reading at home was positively associated with children’s emergent literacy skills as well as conventional literacy skills in Korean. However, children whose parents reported more frequent teaching tended to have low scores in their phonological awareness, vocabulary, word reading, and pseudoword reading after accounting for home reading. These results suggest a bidirectional relationship between home literacy practices, parental teaching in particular, and children’s literacy skills such that parents adjust their teaching in response to their child’s literacy acquisition. Furthermore, cultural variation in views on parental teaching may explain these results.

In sum, storybook exposure and parental teaching about literacy are distinct types of activities in most homes. The two types of literacy experiences (formal and informal) are differentially related to language and early literacy skills. These studies detailed have indicated that children’s storybook exposure may be associated with better vocabulary and listening comprehension skills (Sénéchal & LeFevre, 2002) but not with better phonological sensitivity, letter-name knowledge, or letter sound knowledge (Evans et al., 2000) or with better reading skills in Grades 1 and 3 (Sénéchal & LeFevre, 2002). In contrast, informal teaching activities (e.g., teaching reading, letters, or printing) taking place at home were significantly associated with better written-language skills (Sénéchal

& LeFevre, 2002) and with better letter-name and letter-sound knowledge (Evans et al., 2000) but not with better phonological sensitivity (Evans et al., 2000). Storybook exposure and teaching about literacy have a wider range of associations to reading rather than a more formal impact. In essence, a main distinction of the model is that book exposure is directly related to language development but not to early literacy skills, and parental teaching is directly related to early literacy skills but not to language development. In sum, the aforementioned studies propose that shared book reading can have an effect on general language skills, but more specific activities, such as teaching letter names, letter sounds, or printing, may be necessary to directly impact letter knowledge and reading skills. Phonological sensitivity, in turn, seems to be relatively independent of these aspects of the home literacy.

### **Child Literacy Interest**

Few researchers have investigated how children's interest to read or learn emergent literacy skills plays a role in emergent literacy models. Some research supports that for elementary aged children, motivation and achievement are related (Sperling & Head, 2002). Children's interest in reading at kindergarten age is correlated with number of books they own, how often they were read, and the amount of television they watched (Morrow, 1983). Mason, Stewart, Peterman, and Dunning's (1992) four-year longitudinal study of 127 children from kindergarten through third grade found that children's early interest in reading and involvement in literacy predicts gains in reading comprehension in third grade.

The few research studies that examined early child interest in literacy demonstrate that preschool attitudes and behaviors toward books and reading have been found to

predict later literacy achievement. For example, Scarborough and Dobrich (1994) observed in a three decade review of early emergent literacy research that preschoolers who display greater interest in literacy are also likely to be read to more frequently than other children are and these children are likely to exhibit superior literacy skills during the preschool and school years. This may be due to children's behavior having an impact upon mothers' reading styles and behavior (Morgan, 2005).

In another study, Bracken and Fischel (2008) investigated the family reading behavior of 233 preschool children from low-income backgrounds who were attending Head Start. Parents completed a survey of their family reading behavior. They assessed the children's receptive vocabulary, story and print concepts, letter knowledge, and general emergent literacy skills in the autumn of their preschool year. Results indicated that children's interest in reading was a significant, albeit small, predictor of letter knowledge. In addition, results indicated that children's interest was positively correlated with frequency of storybook reading. That these two dimensions of family reading behavior were both related supports some existing research (e.g., Crain-Thoreson & Dale, 1992; Whitehurst & Lonigan, 2001) and contradicts other research. For example, Baker and Scher (2002) found that children's motivation for reading was not associated with the frequency of storybook reading or library visits. Similarly, Frijters et al. (2000) found that children's literacy interest was independent of home literacy activities. However, specific aspects of these two studies may help shed light on the different outcomes obtained. In the Baker and Scher study, there was very little variance in parental reports of their children's literacy interest; additionally, storybook reading occurred regularly in the homes in their sample. Bracken and Fischel's sample showed a wider range of

responses to the questions on both children's interest, motivation, and enjoyment, as well as the frequency and duration of shared reading, which may account for the significant correlations between child literacy interest and frequency of story book reading. In the Frijters et al. study, child motivation was assessed through child report, whereas parent report was used in Bracken and Fischel's study.

Children with better language skills might initiate reading with caregivers more frequently than other children, but caregivers' reading techniques have a greater influence over children's attention during reading (Fletcher, Cross, Tanney, Schneider, & Finch, 2008). Stephenson, Parrila, Georgiou, and Kirby (2008) examined longitudinally the effects of 61 children's home literacy environment on task-focused behavior (i.e. children's focus and effort), on emergent literacy skills, and word reading. The results indicated that although many of the environmental factors and children's task-focused behavior were significantly correlated with the dependent measures, only a few predicted unique variance in the emergent literacy skills and word reading after nonverbal IQ and vocabulary were controlled. Children's task-focused behavior predicted unique variance in letter knowledge and word reading in kindergarten after controlling for nonverbal IQ, vocabulary knowledge, the other significant predictor variables, and in Grade 1 word reading after controlling for the emergent literacy skills.

Parental involvement can play a key role in developing children's interest in reading. Parents who believe that reading is pleasurable convey that belief to their children (Baker & Scher, 2002). Weigel et al. (2006a) found that parents' engagement in literacy and language activities with their preschool-aged children was positively associated with greater print awareness and interest in reading. In other words, preschool

children exhibited greater print knowledge and stronger interest in reading and books when their parents read aloud to children, provided picture books in the home for children's use, visited the library with their children, and engaged in reciting rhymes, telling stories, drawing pictures and playing games with children. Koskinen et al. (2000) studied the impact of using book-rich classroom environments and home rereading on the reading motivation, comprehension, and fluency of 162 first-grade students. Teachers and their students were placed in one of four conditions: control group, book-rich classroom group, book-rich classroom and home component of daily rereading, and book-rich class and home component of daily rereading with audiotapes. They found that reading comprehension improved in the book-rich classrooms and rereading books in the home—school conditions increased students' reading motivation and promoted parental involvement. Positive and rewarding interactions between the parents and child are assumed to create the motivation to learn literacy and to enjoy book reading (De Jong & Leseman, 2001) which created a greater interest in language-related activities (Bus, de Jong, & Van Ijzendoorn's, 2007).

Intrinsic motivation has been linked to long-term reading interest and pursuits. Zhou and Salili (2008) studied 177 preschool kids in China (3.8 to 6.6 years) examining how home literacy factors affected children's intrinsic reading motivation. They found that after controlling for parents' education level and children's age, three home literacy indicators—parental model of reading behavior, number of books, and years of character letter teaching—could explain children's intrinsic reading motivation. They concluded that the number of children's books at home and the frequency of buying books and reading to the child were positively correlated with children's intrinsic reading

motivation:  $r = .25$  and  $.19$ , respectively. However, among all home literacy indicators, parents' model of reading predicted most powerfully children's intrinsic motivation to read.

### **Problems with Current Research**

Despite the numerous research studies examining the relation between home literacy environments and children's oral language skills and print awareness, there have been relatively few quantitative studies concerning home literacy environment and other emergent literacy skills such as alphabet knowledge and writing skills (Whitehurst & Lonigan, 1998). In addition, the studies that have been conducted have mostly had small samples sizes (less than 100) and have focused mostly on middle-class Caucasian families and neglected populations that are more diverse (ethnically and economically).

The correlations reported between shared book reading and emergent literacy skills are modest. Scarborough and Dobrich's (1994) review of research studies that examined the relations of shared book reading during the preschool years to a variety of tasks designed to assess oral language, letter knowledge, and literacy achievement revealed only a small to modest association between the HLE and educational outcomes. Of the studies reviewed, Scarborough and Dobrich reported a median correlation of  $.26$  in studies examining the relation between shared book reading and measures of children's early literacy.

Past research has usually focused on one HLE measure or one literacy predictor (Van Steensel, 2006). The studies that have focused on more than one HLE predictor or literacy predictor have been conducted mostly with Caucasian and/or middle class samples (i.e., Sénéchal and colleagues, 1998, 2002, 2006). Preschool children from low-

SES backgrounds who are commonly grouped as being at risk for emergent literacy difficulties (and by consequence at risk for later reading problems) do not represent a homogenous group (Cabell, Justice, Konold, & McGinty, 2011) and should not be characterized as such.

Whitehurst and Lonigan (1998) further criticized studies on storybook exposure and reading achievement for including only a single measure of home literacy (e.g., frequency of storybook reading) and a single measure of emergent literacy outcome (e.g., preschool language use). Other researchers have suggested that in order to understand the nature of the relations between HLE and the development of literature and language abilities we must conceptualize the HLE beyond a single measure of emergent literacy, such as shared reading (Scarborough & Dobrich, 1994; Whitehurst & Lonigan, 1998). A more complex conceptualization of the HLE would consider the possibility that different aspects of the HLE could influence different developmental and educational outcomes. Research should also take into account that different aspects of the HLE may exert their influence on different outcomes and the relative importance of the HLE may vary by outcome and developmental period (Scarborough & Dobrich, 1994). For example, as previously mentioned Sénéchal (2006) found that storybook exposure accounted for a significant amount of unique variance in kindergarten and grade 1 children's oral language skills, but not in their written language skills. In contrast, a measure of parental teaching explained significant unique variance in children's written language skills, but not in their oral language skills. In order to improve understanding of the role of the preschool HLE in the development of language and literacy, studies are needed that test the relations of different aspects of the HLE to a variety of early literacy outcomes.

Lonigan (1994) argued that many of the earlier studies of shared book reading suffered from methodological problems that limit the validity of their conclusions. According to Lonigan, preschool storybook exposure is likely to be related to some aspects of language, emergent literacy, and reading achievement, but not to others.

### **Research Questions**

The first research question will examine the home literacy environment (HLE) of families with children aged 3 to 5 years old from Head Start programs and the impact of the HLE on the children's emergent literacy skills. Through parental questionnaires and pre- and post- assessments of children's early literacy skills, this study will examine the relationship between parental involvement in early literacy activities and children's emergent literacy abilities. This study will examine how home literacy experiences (formal and informal) differentially predict emergent literacy outcomes including measures of oral language, alphabet knowledge, and print awareness. Many prior studies of parent-preschooler reading have investigated the frequency of shared book reading. Few studies have studied the quality of those interactions. Research question one will address the following issue: Does children's book *exposure*, *quality* of shared book reading of parents and child, and parental literacy *teaching* (separate from shared book reading) of emergent literacy skills differentially predict young children's emergent literacy outcomes, including their oral language, alphabet knowledge, and print awareness while controlling for Head Start classroom literacy environment and child age?

The second aim of the study was to examine the role of children's interest of reading and engagement in literacy activities on their emergent literacy skills.



Motivation research has largely neglected preschool age children and very few studies have examined the effect of child interest of reading and of literacy activities on the development of emergent literacy skills. Research question two addressed the following issue: Does child interest in reading, reading engagement, and interest in literacy activities predict emergent literacy outcomes such as oral language, alphabet knowledge, and print awareness while controlling for Head Start classroom literacy environment and child age? Because very little research exists on the role that children's interest in reading and literacy skills has on their emergent literacy development for preschool aged children, this question will be somewhat exploratory.

### CHAPTER 3: METHODOLOGY

This study used a small portion of the data collected for a larger grant study, *Exemplary Model of Early Reading Growth and Excellence* (EMERGE) conducted by Dr. Karen Stoiber and Dr. Maribeth Gettinger. EMERGE has been implemented through the University of Wisconsin-Milwaukee and Madison at various Head Start sites since 2005. Parental involvement is one aspect of the EMERGE project, which seeks to turn several Head Start and Early Childhood center classrooms throughout the Milwaukee area into exemplary, scientifically-based, early literacy programs. In the EMERGE classrooms, teachers received curriculum materials, professional development training on early literacy practices and progress monitoring, and mentoring (See Gettinger & Stoiber, 2008; 2012). For this study, extant data collected during the 2008 to 2009 school year were used.

Sénéchal and LeFevre's (2002) model formed the theoretical basis for predictions tested for research question one (stated at the end of chapter 2) in the current study. Consistent with Sénéchal and LeFevre's (2002) model, it was predicted that book exposure will only predict receptive vocabulary and oral expression whereas the quality of shared book reading and parental literacy teachings was expected to predict alphabet knowledge and print awareness but not oral language ability. Sénéchal and LeFevre's (2002) model hypothesized that exposure to storybooks fails to predict emergent literacy skills such as alphabet knowledge and print knowledge because exposure to books by itself is not sufficient to foster children's specific emergent literacy skills. Instead, children's acquisition of print knowledge and alphabet knowledge requires guidance through parental literacy teachings separate from and throughout shared book reading.

Exposure to books only predicts oral language because children are exposed to language through books, but print is not necessarily the focus of these interactions.

### **Participants**

The participants were 146 low-income children and their families living in Milwaukee, a large urban Midwestern city. The children were students at various Head Start and Early Childhood centers throughout Milwaukee. At the time of data collection in spring 2009, 48 (32.9%) of the children were 3 years old, 74 (50.7%) were 4 years old, and 24 (16.4%) were 5 years old. There were 68 males and 78 females. All of the children were from families with low socio-economic status who met the income eligibility criteria for participation in the Head Start Program. The self-identified ethnicity of parents included 124 African Americans (84.9%), nine Caucasians (6.2%), six Hispanic Americans (4.1%), two Asian or Pacific Islander Americans (1.4%), and five mixed or other (3.4%). As for the highest education level attained by parents, 17 (11.6%) attended some high school, 44 (30.1%) had graduated high school, 57 (39%) attended some college, 22 (15.1%) had graduated from college, and 4 (2.7%) had attended or completed graduate school. Two participants did not answer the schooling question. To see the breakdown of the child and parent demographics, see Table 1.

Table 1  
*Demographics Descriptives*

	N	%
Gender of Child		
Male	68	46.6
Female	78	53.4
Age of Child		
3 Years Old	48	32.9
4 Years Old	74	50.7
5 Years Old	24	16.4
Ethnicity of Parent		
African American	124	84.9
Hispanic	6	4.1
White	9	6.2
Asian	2	1.4
Multiple Races	5	3.4
Highest level of Schooling Completed by Parent		
Some High School	17	11.6
Graduated from High School	44	30.1
Some College	57	39
Graduated from College	22	15.1
Attended or Completed Graduate School	4	2.7
Missing	2	1.4

## **Procedures**

Parent participants completed a family reading questionnaire, the Home Literacy Environment Questionnaire (HLEQ; Stoiber & Gettinger, 2007; Stoiber, Gettinger, VanGrinsven, Hernandez, & Fenelon, 2011). All of the families had children enrolled in the EMERGE early literacy program. At the end of the school year, the HLEQ was sent home by the Head Start classroom teacher; parents returned the envelope containing the questionnaire in a self-addressed envelope to the Project EMERGE address. The HLEQ was described previously in the Predictor Measures section of this chapter, and contains questions regarding the quantity of shared book interactions, the quality of the interactions, how often parents taught specific emergent literacy skills, and their child's interest in reading books. Child participants were administered early literacy measures at their Head Start centers at the beginning and the end of the school year by trained graduate students (child measures described below). Test administrations at both pre- and post-testing for each child were conducted over two sessions within a four-week period to ensure optimal performance on all tasks. The data gathered at the end of the school year served as the child outcome variables.

## **Predictor Measures**

**Home Literacy Environment:** The Home Literacy Environment Questionnaire (see appendix A) was a measure created specifically for the EMERGE project by the project directors (Stoiber & Gettinger), and serves as one of the predictor measures. Stoiber, Gettinger, VanGrinsven, Hernandez, and Fenelon (2011) reported preliminary findings of the Home Literacy Environment Questionnaire (HLEQ) used for this study. They reported that parental involvement in two areas of the HLE Family Survey showed

significant associations with child performance on literacy measures: Child Book Reading Behavior (e.g., point to pictures while reading; retell stories or story parts) and Child Early Literacy Behavior (e.g., find letters of name in everyday print; play ABC games & puzzles; do writing and drawing games). Both Child Early Literacy Behavior subscale (CELB) and Child Book Reading Behavior (CBRB) showed significant correlations with vocabulary development as measured by the Peabody Picture Vocabulary Test-III (PPVT III) (CELB:PPVT III ( $r=.16, p=.04$ ); CBRB: PPVT III ( $r=.30, p<.01$ )) and alphabet knowledge as measured by the Phonological Awareness and Literacy Screening-PreKindergarten (CELB:PALS PRE-K Uppercase Letters ( $r=.28, p<.01$ ); CBRB: PALS PRE-K Uppercase Letters ( $r=.31, p<.01$ )).

The HLEQ contained six subscales: Core Reading Development, Shared Book Reading Activities, Parental Early Literacy Behavior, Child Reading Interest, Child Book Reading Behavior, and Child Early Literacy Behavior. These six subscales are discussed below. A demographic questionnaire that asked parents information regarding their age, gender, education, and ethnicity was also included in the HLEQ.

The Core Reading Development subscale contained questions regarding the frequency of reading to the child, the number of children's books, and the frequency of library visits, as well as other literacy activities. For example, parents reported the frequency of how often they read a book to their child at bedtime and other times in a typical week on a 4 point scale (1=never, 2=few times (1-2 times), 3=sometimes (3-5 times), and 4= daily (6-7 times)). Book exposure was also measured by the EMERGE family library data. The EMERGE family library was a library facilitated by trained graduate students at the various Head Start centers in the EMERGE project. The purpose

of the family library was to encourage families to read together at home by providing them with quality books and simple activities to promote family interactions. The families were allowed to check out one children's book once a week. The amount of books checked out for the school year was tracked for each student. This section is considered the informal reading section and assesses the quantity of book exposure activities.

The Shared Book Reading Activities subscale measured how parents engage their children in the shared book reading activity pinpointing what dialogic reading techniques were used. For example, parents reported when reading books with their child, how often did they point to letters and name them on a 4 point scale (1=never, 2=few times (1-2 times), 3=sometimes (3-5 times), and 4= often (6-7 times)).

The Parental Literacy Behavior Scale assessed what literacy activities parents' engaged in with their children that are not part of shared book reading. For example, parents reported how often they made up rhyming words with their child in a typical week on a 4 point scale (1=never, 2=few times (1-2 times), 3=sometimes (3-5 times), and 4= daily (6-7 times)). The Shared Book Reading Activities and the Parental Literacy behavior subscales measure the formal reading exposure and the quality of parental literacy teachings.

The Child Reading Interest subscale assessed how interested each child was in reading books. For example, parents reported how often their child read or looked at books by him or herself in a typical week on a 4 point scale (1=never, 2=few times (1-2 times), 3=sometimes (3-5 times), and 4= daily (6-7 times)).

The Child Book Reading Behavior subscale measured the engagement of the child while being read a book. For example, parents report how often their child finds words with the same letters as his/her name in a typical week on a 4 point scale (1=never, 2=few times (1-2 times), 3=sometimes (3-5 times), and 4= daily (6-7 times)).

The Child Early Literacy Behavior subscale measured the child interest of literacy activities not part of shared book reading. For example, parents reported how often their child drew, wrote, or pretended to write in a typical week on a 4 point scale (1=never, 2=few times (1-2 times), 3=sometimes (3-5 times), and 4= daily (6-7 times)).

Three subscales – The Child Reading Interest subscale, the Child Book Reading Behavior subscale, and the Child Early Literacy subscale – were used to answer the second research question and were considered the child literacy interest section. The Child Reading subscale assessed the child's willingness pretend to read or be read to. The Child Book Reading Behavior Subscale addressed the child's engagement while being read to. The Child Early Literacy subscale assessed the child interest of engaging in literacy activities that are not shared book reading. This interest in reading and literacy activities was included because a lack of interest may affect the extent to which parents engage in literacy activities with their child.

To assess whether the six subscales formed a reliable scale, Cronbach's alpha was computed. This measure indicated the consistency of a multiple-item scale. The alpha for the Core Reading Development subscale was .76, for Parental Early Literacy Behavior was .79, for Child Book Reading Behavior was .72, and Child Early Literacy Behavior was .88, which indicated that the items for the subscales have reasonable internal consistency reliability. The alpha for the Shared Book Reading Activities was



.91, which indicated that some of the items are repetitious. The alpha for Child Reading Interest was .69, which indicated minimally adequate reliability.

### **Child Outcome Measures**

**Receptive Vocabulary:** The *Peabody Picture Vocabulary Test-III* (PPVT-III; Dunn & Dunn, 1997) was used to assess the children's receptive (listening) comprehension and vocabulary acquisition. This test was a widely used, norm-referenced measure of vocabulary for individuals from 2.5 years to 40 years of age exhibiting a range of diverse abilities. During administration of this norm-referenced measure, children viewed a test plate of four black and white illustrations and were asked to point to the picture that most closely represents the verbal stimulus presented. The test was scored in the conventional manner yielding both raw scores and standardized scores related to national norms. This study used the standardized scores for the analyses. The PPVT-III demonstrates test-retest reliability based on different age samples of .91–.94, as well as strong internal consistency of .95 and .94 (Cronbach's alpha, split-half reliability, respectively) (Dunn & Dunn, 1997). The test developers also report information regarding content, construct, and criterion related validity in the test manual that are generally acceptable.

**Oral Expression:** An oral comprehension measure developed for the EMERGE project was used (see appendix B for sample of story). The informal oral comprehensive task was developed as a measure of oral expressive vocabulary, memory, and comprehension of short stories. The task involved the following: four spiral-bound, fully-colored pictures illustrating the events of the short-story; two animal characters, one major, one supporting; a title; a defined setting; an introduction; an initiating event; a

problem; and a resolution. After hearing the story and seeing the pictures, the children were asked to retell everything they remembered about the story (while looking at the pictures). A structured scoring protocol was developed and used for the current study (see appendix B for example of protocol used). Points were given if the child introduced the story, identified the characters, mentioned the setting, the sequence of events, identified the problem, and mentioned the resolution. After retelling the story, the children were asked questions that prompted the characters, setting, events, emotions, problems, resolutions, and predictions and given points for correct answers. Different “blind” graduate students from the examiner who administered the test rescored the measure. Inter-rater reliability was evaluated by correlating the original coding of each protocol with the re-coded score. There was acceptable inter-rater reliability at all three levels, total score ( $r = .908, p < .001$ ), questions ( $r = .864, p < .001$ ), and story re-telling ( $r = .828, p < .001$ ).

**Alphabet Knowledge:** To assess letter-name knowledge, a subscale from the *Phonological Awareness and Literacy Screening-PreKindergarten* (PALS-PreK; Invernizzi, Sullivan, Meier & Swank, 2004) was used. The PALS-PreK was designed to measure preschoolers’ developing knowledge of literacy skills that are predictive of future reading success (median correlation with kindergarten reading = .70) (Invernizzi et al., 2004). Children were directed to name upper-case letters presented in random order, identify lower-case letters (if 16 or more upper case letters were named), and produce the sounds associated with the letters (if 9 or more lower-case letters were named). The PALS-PreK Teacher’s Manual (Invernizzi et al., 2004) reported an inter-rater reliability

coefficient of .99, with concurrent validity for the print-related tasks (including this task and name writing) exhibiting correlations of .61 and .71 with similar assessments.

**Print Knowledge:** To assess print awareness, a print knowledge subscale from the PALS-PreK was administered. For this measure, an examiner read a short book to the child and the examiner asked the child 10 questions throughout the story. This book-reading activity assessed the children's awareness of print concepts such as directionality of words, the function of the book parts (e.g. title), and the difference between pictures and words. For example, the examiner asked the child, "Point to the words on this page". The children were rewarded a point for each question they answer correctly.

**Name Writing:** An adapted version of the PALS-PreK Name Writing task (Invernizzi et al., 2004) was used to also assess print awareness. For this measure, an examiner directed the child to simply write his name to assess name-writing skill. Children's skill in name writing was scored on a scale of 0 to 5 points. Children received zero points if their name was an unrecognizable scribble. They received one point if the scribble contained random letters and symbols that are discernible units. They received two points if the name consists of correct letters combined with non-meaningful symbols or letters that are not in the child's name. They earned three points if their name consisted of more than 50% of correct letters. They received four points if their name was generally correct with some backward letters or with correct letters in the wrong order. They earned five points if the name was correct with no backwards letters.

### **Control Variables**

Two variables were controlled in the hierarchical analyses: age of the child and the Head Start classroom literacy environment. The assessment of the classroom

environment was completed using the Early Language and Literacy Classroom Observation (ELLCO; Smith & Dickinson, 2002). The ELLCO was an observation tool for assessing the quality of literacy environments in early childhood classrooms. Available research indicated acceptable construct validity and inter-rater reliability for the ELLCO, as well as utility for measuring environmental changes across time (Smith & Dickinson, 2002). The ELLCO consisted of three parts: (a) Literacy Environment Checklist, (b) one 40-minute classroom observation, and (c) Literacy Activities Rating Scale. The checklist focused on classroom organization and literacy materials. It consisted of 24 items that were scored using either a yes-no format (e.g. “Is an area set aside just for book reading?”) or a rating indicating the number of literacy materials available (e.g. “How many varieties of teacher dictation are on display in the classroom?”). The classroom observation occurred continuously over a 40-minute period of time during which there was a teacher-directed focus on literacy activities. Observers noted and rated the frequency and quality of language and literacy related teacher interactions and behaviors. Finally, the literacy activity ratings scale included items related to book reading and writing activities in the classroom throughout the day.

### **Data Analyses**

**Analysis 1:** A principal axis factor analysis (PA) with Promax rotation was conducted on the 244 surveys completed by families as a preliminary analysis. Out of the 244 surveys completed, child outcome data was collected on 144 families. The reasons for the reduced number includes: 1) children being in the control group for the EMERGE project who were not assessed as comprehensively as the children participating in the EMERGE project, 2) children being frequently absent from school, and 3) children

moving into the schools in the middle of the school year. PA was used to assess the underlying structure for the 61 questions of the parent-reading questionnaire. Six factors were requested of the factor analysis based on the fact that the survey items were designed to index six constructs: Core Reading Skill Development, Parental Early Literacy Behavior, Shared Book Reading Activities, Child Reading Interest, Child Book Reading Behavior, and Child Early Literacy Behavior. The type of factorial analysis was based on suggested best practices by various researchers. For example, Russell (2002) and Costello and Osborne (2005) described several best practices when computing factor analysis on data sets. They suggested that oblique rotations over orthogonal rotations are best in the use of social sciences because oblique rotations take into account the correlations between variables. In the social sciences, it is generally expected that some correlation among factors exist, since behavior is rarely partitioned into neatly packaged units that function independently of one another. Therefore using orthogonal rotation results in a loss of valuable information if the factors are correlated, and oblique rotation should theoretically render a more accurate, and perhaps more reproducible, solution. If the factors are truly uncorrelated, orthogonal and oblique rotations produce nearly identical results.

Other best practices suggested were that the sample size should be at least 100 while maintaining a minimum 5:1 ratio of participants to variables, each factor should have at least three variables, and the level of communality for each variable should be at least 60. Costello and Osborne (2005) recommend using principal axis (PA) factor analysis over principal component analysis (PCA) even though PCA is the most commonly used technique in social sciences research. Costello and Osborne (2005)

stated that Principal Component's analysis is only a data reduction method. PCA became common to use decades ago because computers were slow and expensive to use, so PCA was a quicker, cheaper alternative to factor analysis. PCA is computed without regard to any underlying structure caused by latent variables; components are calculated using all of the variance of the manifest variables, and all of that variance appears in the solution. Principal Components Analysis does not discriminate between shared and unique variance. When the factors are uncorrelated and communalities are moderate it can produce inflated values of variance unaccounted for by the components.

**Analysis 2:** Descriptive analyses were computed on all dependent (child emergent literacy outcome measures) and independent variables (parental survey variables) and the 10 demographic questions gathered. First, correlation coefficients were calculated among all independent variables to determine whether there are significant relationships among the measures. Tests for collinearity of independent measures were conducted. A commonly used rule of thumb is that a variance inflation factor (VIF) of 10 or more is evidence of severe multicollinearity (Cohen, Cohen, West, & Aiken, 2003).

**Analysis 3:** Hierarchical regression analyses were used to address research question one, which asks whether and to what extent children's book exposure, quality of shared book reading of parents and child, and parental teaching of emergent literacy skills differentially predict emergent literacy outcomes, including oral language, alphabet knowledge, and print awareness while controlling for age and Head Start classroom literacy environment. The predictor variables for each analysis were the book exposure construct (Core Reading Skill Development subscale and Family Library visits), the quality of shared book reading factor (Shared Book Reading Activities subscale), and

parental literacy teaching (Parental Early Literacy Behavior subscale). The predictors were measured by the parental questionnaire and Family Library visits. The predictor variables were used to predict oral language (as measured in the previous analysis), alphabet knowledge, and print awareness as all measured at the end of the school year in separate analyses. Each analysis controlled for age as a proxy for development and the Head Start classroom literacy environment. It was hypothesized that the parents' reported child exposure to books and teaching of explicit emergent literacy skills during shared book reading and in other settings will lead to different emergent literacy outcomes. Consistent with Sénéchal and LeFevre's (2002) model, it was predicted that book exposure will only predict receptive vocabulary and oral expression whereas quality of shared book reading and parental literacy teachings will predict alphabet knowledge and print awareness but not oral language ability. These findings were expected to extend Sénéchal's (2006) and Hood's et al. (2008) results to children from low-SES families.

**Analysis 4-** To address research question two—does child interest in reading, reading engagement, and interest in learning literacy skills predict emergent literacy outcomes such as oral language, alphabet knowledge, and print awareness while controlling for Head Start classroom literacy environment and child age—hierarchical regression analyses were done on the child interest in reading, child engagement of reading, and child interest in learning literacy skills variables as reported by parents in the questionnaire and the children emergent literacy outcome variables.

To examine child engagement and interest in reading and literacy skills as a predictor of oral language, two analyses were conducted. A hierarchical regression

analysis was conducted using the following variables: the child interest factors from the parent survey (Child Reading Interest, Child Book Reading Behavior, and Child Early Literacy Behavior), the children's receptive vocabulary standardized score as measured by the PPVT-III at the end of the school year, age, and Head Start classroom literacy environment. The predictor variables were the child interest factors. Each analysis used age and the Head Start classroom literacy environment as control variables. The outcome variables were the PPVT-III standardized score from the end of the school year.

A similar analysis was conducted for predicting oral expression as measured by the child's responses to questions about a short story. Oral expression ability as measured at the end of the school year was substituted as the outcome variable and Head Start classroom literacy environment. These two analyses were used as a measure of a child's oral language ability. Similar hierarchical regression analyses were done to analyze whether and to what extent child literacy interest predicts alphabet knowledge and print awareness. In all of these analyses, age and Head Start classroom literacy environment were controlled. Because there is limited research conducted on the variable of child interest of reading and literacy activities, analyses conducted with this family involvement variable as a predictor were exploratory.

In the original proposal of this study, prior knowledge of each emergent skill assessed was proposed as a controlling factor. It was found that age was highly correlated with each prior emergent literacy skill and thus drowned out many significant findings. In chapter 4, the results are analyzed using age as a proxy for development instead of both age and prior knowledge. The results with prior knowledge as a control factor are listed in appendix D as ancillary analyses.



## **CHAPTER 4: RESULTS**

The following are results from the present study. Results are organized as follows: (1) factor analysis of the parent survey; 2) preliminary analyses (descriptives and correlations) and; (3) hierarchical regression analyses for questions 1 and 2.

### **Analysis 1: Factor Analysis**

**Six Factors:** A principal axis factor analysis (PA) with Promax rotation and Kaiser normalization was conducted on the 244 complete surveys completed by families as a preliminary analysis to investigate how each survey question loaded onto the six subscale factors. In the first analysis (see Table 2), six factors were analyzed, based on the six constructs indexed by the survey items: Core Reading Skill Development, Parental Early Literacy Behavior, Shared Book Reading Activities, Child Reading Interest, Child Book Reading Behavior, and Child Early Literacy Behavior. Several assumptions were tested as follows. The determinant should be more than .0001 to demonstrate no collinearity; the actual determinant is 2.15E-16. However, multicollinearity for exploratory factor analysis is not usually an issue. The results do suggest that the variables are highly correlated with each other. All other assumptions were met. Three questions did not load on any factors (How old was your child when you started reading picture books to him or her? Please estimate the number of children's books that are available in the household? Does your child have a favorite book?). As the variables were highly correlated with each other, it was decided to conduct another factor analysis loading the questions onto three factors instead of six (see the next subsection). It was hypothesized that conceptually, the two parental literacy teachings subscales (Parental Early Literacy Behavior and Shared Book reading Activities) could

be combined, and the three child literacy interest subscales (Child Reading Interest, Child Book Reading Behavior, and Child Early Literacy Behavior) could also be combined into one factor. The Core Reading Skill Development subscale could still stand alone in one factor as the book exposure variable.

Table 2  
*Factor Loadings for the Structure Factors for 6 HLEQ Survey Subscales*

Item	Factor Loadings						Communality
	1	2	3	4	5	6	
While reading: Ask child to point to a word	.79	.36	.45	.35	.39	.37	.73
While reading: Ask child to read a word	.78	.36	.38	.31	.33	.38	.68
Read incorrectly and child correct you	.71						.67
While reading: Ask what will happen next	.68	.47	.54	.47	.41	.32	.72
While reading: Ask child what happened	.68	.48	.57	.47	.44	.35	.70
You: Count the number of syllables	.67					.33	.66
Child: Reads the page numbers of a book	.65	.35				.34	.61
Child: Reads the title or cover of a story	.64	.50		.36	.35	.35	.62
Child: Guesses what will happen next	.62	.57	.33	.42	.39	.34	.67
Ask child to point to the title, author, etc.	.61	.41	.38	.35	.32		.66
Child: Retells story while turning pages	.57	.53	.30	.37	.34	.38	.59
You: Read the names of the author, etc.	.48	.43	.31				.56
Child: Labels pictures of objects in a book	.48	.48	.45	.43	.44	.32	.53
Child: Asks you, "What does this say?"	.55	.71	.41	.32	.34	.32	.71
Child: Asks "What does this say?"	.44	.69	.47	.36	.34	.32	.65
Child: Turns pages of a book	.49	.68	.50	.46	.50	.31	.71
Child: Asks you questions about story	.37	.67	.44	.41			.63
Child: Asks you to read books to him/her		.66	.45	.37	.43		.64
Child: Tells activities did without you		.65	.40	.35	.35	.36	.61
Child: Draws, writes, or pretends to write		.63	.425	.33		.39	.59
Child: Says "The End" at end of a story	.40	.62	.36	.31	.31		.58
Child: Retells stories from TV or books	.35	.60	.32	.41		.31	.56
Child: Pretends to read books	.35	.60	.39	.38		.40	.58
Child: Points to and reads letters or words	.57	.59	.41	.40	.36	.57	.66
Child: Points to pictures in a book		.58	.536	.36	.38		.63

While reading: Read the title page or cover		.55	.517	.38	.39		.55
Child: Enjoys being read to		.52	.34		.44		.52
You: Ask your child to "turn the page"	.47	.50	.50	.37	.47		.60
You: Provide child with materials to write		.49	.39	.41		.33	.51
Child: Listens quietly as someone reads		.48			.44		.53
Child: Reads or looks at books by self		.45	.33	.31	.43		.43
Child: Pretend to talk in another language	.35	.40		.34			.43
While reading: Ask child point to pictures	.38	.52	.79	.33	.35	.37	.71
While reading: Name letters	.44	.43	.74	.36	.44	.33	.66
While reading: Name pictures as you read		.44	.72	.41	.37		.59
While reading: Ask child to label pictures	.39	.49	.71	.36	.39		.69
Point to words in book as you read	.32	.43	.68				.62
You: Read a story to child beside bedtime	.31	.39	.52	.52	.45		.55
You: Make up stories or silly words	.39	.38		.74	.37		.64
You: Sing songs with your child		.33		.67		.30	.53
You: Make up rhyming words with child	.50	.37	.34	.67	.36	.36	.64
You: Do songs or games with child	.46	.36	.40	.58	.35		.55
Child: Recites nursery rhymes	.38	.49	.32	.57	.32	.39	.60
You: Conversations with child about books		.49	.49	.56	.33		.54
You: Do activities to extend the story	.47		.32	.52	.41		.51
You: Tell the story in your own words	.47	.36	.38	.49	.43		.54
You: Look at other print with child	.45	.46	.46	.47	.30	.31	.51
You: Sing the ABCs with your child	.34		.41	.41	.38	.31	.47
Age of child when started reading to child?							.42
Number of books in the household:							.40
You: Gave child a book or magazine		.38	.36	.37	.67		.58
You: Brought home learning materials	.34	.43	.39	.42	.64	.31	.63
You: Taken your child to visit a library	.37				.62		.47
You: Taken your child to the museum, zoo,					.57		.52

You: Watched an educational program	.33	.37	.37	.32	.49		.54
You: Read a book to your child at bedtime		.34		.38	.44		.40
Does your child have a favorite book?							.34
Child: Find the first letter of his/her name	.35	.46	.37	.37		.88	.74
Child: Find words with letters as name	.45	.44	.33	.35		.84	.73
While reading: Ask child to find letters	.59	.38	.61	.36	.41	.65	.69
You: Find first letter of child name in print	.45	.35	.35	.41	.37	.61	.57
Eigenvalues	11.9	13.1	10.8	9.8	8.7	7.2	

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*Note:* Loadings <.30 are omitted

**Three Factors:** A principal axis factor analysis (PA) with Promax rotation and Kaiser normalization was conducted on the 244 complete surveys completed by families as a preliminary analysis to see how the survey questions loaded onto three factors. In this second analysis (see Table 3), three factors were analyzed: Core Reading Skill Development (book exposure), Parental Literacy Teachings, and Child Literacy Interest (see appendix B for a list a questions for each subscale). Several assumptions were tested and met. The determinant should be more than .0001 to demonstrate no collinearity; it was found to be 2.15E-16. This suggests that the variables are highly correlated with each other. All other assumptions were met. After rotation, the first factor, which appeared to measure child literacy interest, accounted for 14.41% of the variance, the second factor, which measured parental literacy teaching, accounted for 13.05%, and the third factor, which measures the child book exposure, accounted for 11.35%. Table 5 displays the items and factor loadings for the rotated factor, with loadings less than .30 omitted to improve clarity. Two questions did not load on any factors (Please estimate the number of children's books that are available in the household, and does your child have a favorite book?). For the most part, despite the high correlations the questions loaded where hypothesized except for 4 questions (Do you: Print words or provide your child with pencils, markers or other materials to write or pretend to write; Sing songs or recite nursery rhymes; Read the title page or cover; Point to and name pictures as you read). These six questions were eliminated from the survey for all future analyses. A list of all the questions for each subscale can be found in appendix B. From the results of this analysis, it was decided to go forward with the hierarchical regression analyses with the three subscales despite the high correlation of the subscales because the subscales

conceptually made sense to be separate and to keep with the integrity of the research study hypotheses.

A factor analysis comparison was done on the sample of children who had outcome data available compared to the children for whom outcome data were not available. The factor analysis results were very similar between the two groups, thus suggesting no bias due of the sample of children with complete data.

Table 3

*Factor Loadings for the Structure Factors for Three HLEQ Subscales*

Item	Factor			Communalities
	1	2	3	
Child: Asks "What does this say?" when looking at print	.68	.47	.38	.65
How often did your child: Turns pages of a book	.68	.52	.52	.71
How often did child: Asks you, "What does this say?"	.67	.58	.33	.71
Child: Asks questions or makes comments about the story	.66	.41	.37	.63
How often did child: Asks you to read books to him/her	.66	.32	.44	.64
Child: Tells you about activities he/she did without you	.65	.33	.36	.61
How often did child: Draws, writes, or pretends to write	.65			.59
While reading: Ask your child to point to pictures	.64	.42	.47	.71
How often did your child: Points to pictures in a book	.63		.44	.63
How often did your child: Pretends to read books	.60	.40	.35	.58
How often did child: Says "The End" at end of a story	.59	.43	.32	.58
While reading: Ask your child to label pictures	.59	.42	.50	.69
While reading: Read the title page or cover	.59		.46	.55
Child: Retells stories from TV, movies, videos, or books	.57	.39	.31	.56
While reading: Point to and name pictures as you read	.56		.52	.59
While reading: Point to letters and name them	.55	.47	.53	.66
While reading: Ask your child to "turn the page"	.54	.49	.49	.60
While reading: Point to words in the book as you read	.53	.35	.40	.62
You: Have conversations with child about books	.53	.33	.53	.54
Child: Finds the first letter of name in everyday print	.52	.44	.34	.74
You: Provide child with materials to write	.52		.39	.51
Child: Labels pictures of objects in a book	.51	.50	.50	.53
How often did your child: Enjoys being read to	.50		.35	.52



How often you: Look at other printed material with child	.50	.47	.45	.51
How often did your child: Recites nursery rhymes	.49	.43	.48	.60
How often did your child: Reads or looks at books by self	.46		.41	.43
How often did child: Listens quietly as someone reads	.45		.36	.53
While reading: Ask your child to point to a word	.40	.78	.43	.73
While reading: Ask your child to read a word	.39	.77	.37	.68
While reading: Ask your child to explain what happened	.53	.68	.54	.70
While reading: Ask child what will happen next	.51	.68	.53	.72
Read incorrectly and wait for child to correct		.68		.67
How often you: Count the number of syllables in words		.66		.66
How often did child: Reads the page numbers of a book	.33	.65		.61
How often did child: Reads the title or cover of a story	.47	.65	.35	.62
How often did your child: Guesses what will happen next	.54	.64	.41	.67
While reading: Ask child to find letters and name them	.51	.63	.47	.69
How often did child: Points to and reads letters or words	.61	.62	.39	.66
While reading: Ask your child to point to the title, author,	.41	.60	.38	.66
How often did child: Retells story while turning pages	.51	.59	.36	.59
Child: Finds words with the same letters as his/her name	.50	.52	.32	.73
You: Find the first letter of child's name in everyday print	.41	.50	.42	.57
While reading: Read the names of the author	.42	.48		.56
How often did child: Pretend to talk in another language	.35	.38		.43
How often you: Make up stories, poems, or silly words	.38	.42	.60	.64
You: Read story to child at other times beside bedtime	.46	.34	.59	.55

You: Brought home learning materials for your child	.46	.38	.58	.63
How often you: Make up rhyming words with your child	.39	.53	.57	.64
You: Given your child a book or magazine as a gift	.41		.57	.58
You: Do "finger play" songs or games with your child	.39	.47	.54	.55
Do play activities to extend the story you read or told		.48	.53	.51
While reading: Tell the story in your own words	.39	.48	.53	.54
How often have you: Taken your child to visit a library		.37	.51	.47
How often did you: Sing the ABCs with your child	.36	.37	.47	.47
How often you: Sing songs or recite rhymes with child	.35		.47	.53
Watched an educational TV program or video with child	.41	.36	.46	.54
Read a book or story to your child at bedtime	.33	.30	.45	.40
Taken your child to the museum, zoo, etc.			.43	.52
How old was child when started reading books to?			.32	.42
Eigenvalues	14.4	13.1	11.3	

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*Note.* Loadings <.30 are omitted.

## Analysis 2: Descriptives and Correlations

The means and standard deviations were computed for all child outcomes and predictor variables. They were computed on the total sample and computed dividing the sample into the three different ages of the children. The results are displayed in Table 4.1, Table 4.2, Table 4.3, and Table 4.4. Intercorrelations among and between the dependent and independent variables were computed. High relation between predictors could result in a biased estimation of regression statistics (i.e., collinearity). It should be noted that most of the survey questions were on a 4-point scale. However, a few questions were on a different scale (yes and no questions, etc.). To average the scales into a subscale, all the question scales were standardized to a value between zero and one. It should also be noted that the survey subscale predictor variables were constructed into three subscales based on the factor analyses. See the factor analyses results section and appendix B to see how the survey subscales were created as a guide to understanding the correlation tables.

The correlations of the predictor variables to each other and the outcome variables to each other are displayed in Table 5.1 and Table 5.2. Intercorrelations among most of the independent variables suggest a low to moderate relationship. Correlations that were moderate to high and found to be significant at or below the  $\alpha = .05$  level include the following: Receptive vocabulary and oral expression ( $r = .37$ ), receptive vocabulary and print knowledge ( $r = .34$ ), oral expression and name writing ( $r = .20$ ), oral expression and print knowledge ( $r = .43$ ), name writing and letter knowledge ( $r = .62$ ), name writing and print knowledge ( $r = .52$ ), letter knowledge and print knowledge ( $r = .40$ ), book exposure and parental literacy teaching ( $r = .69$ ), book exposure and child literacy interest ( $r = .63$ )

and parental literacy teaching and child literacy interest ( $r = .73$ ). Cohen et al. (2003) suggests that correlations above .70 could indicate a problem with multicollinearity. By this rule, none of the correlative associations except for the relationship between parental literacy teaching and child literacy interest was high enough to indicate a risk for multicollinearity.

The correlations between the parent predictor variables and child outcome variables are displayed in Table 5.3. Intercorrelations between the predictor and outcome variables suggest a low relationship expect for four significant findings. Correlations that were moderate and found to be significant at the  $=.05$  level include the following: Receptive vocabulary and book exposure ( $r = .15$ ), oral expression and book exposure ( $r = .14$ ), name writing and child literacy interest ( $r = .18$ ), letter knowledge and EMERGE family library visits ( $r = .14$ ). It is important to note that although significant, they were not found to be significant at the .01 level or correlated at a level above .20. Age, a control variable, correlated significantly with most of the child outcome variables (oral expression  $r = .33$ , name writing  $r = .53$ , letter knowledge  $r = .38$ , and print knowledge  $r = .51$ ). These high correlations were expected, and thus support using age to control for development in the hierarchical regression analyses.

Table 4.1

*Means, Standard Deviations, and Range for Child Outcomes and Predictor Variables*

*(N=146).*

Variable	<i>M</i>	<i>SD</i>	<i>Min</i>	<i>Max</i>
Outcome Variables				
Receptive Vocabulary (PPVT)	89.64	13.81	51	117
Oral Expression	9.64	4.71	0	19
Letter Knowledge (PALS)	12.71	9.96	0	26
Name Writing (PALS)	2.37	1.47	0	5
Print Knowledge (PALS)	4.71	2.51	0	10
Predictor Variables				
Head Start Literacy Environment	50.86	11.98	33	65
Book Exposure Subscale	.66	.17	.14	.96
Parental Literacy Teaching Subscale	.65	.17	.18	1
EMERGE Library Visits	6.15	6.99	0	25
Child Literacy Interest Subscale	.74	.16	.33	1

\* $p < .05$ , \*\* $p < .01$

Table 4.2

*Means, Standard Deviations, and Range for Child Outcomes and Predictor Variables for 3-year-old children (N=48).*

Variable	<i>M</i>	<i>SD</i>	<i>Min</i>	<i>Max</i>
Outcome Variables				
Receptive Vocabulary (PPVT)	88.75	13.06	59	110
Oral Expression	8.35	4.30	1	19
Letter Knowledge (PALS)	9.04	8.85	0	26
Name Writing (PALS)	1.40	1.01	0	5
Print Knowledge (PALS)	3.17	1.84	0	7
Predictor Variables				
Book Exposure Subscale	.66	.19	.24	.93
Parental Literacy Teaching Subscale	.64	.17	.26	.93
EMERGE Library Visits	4.77	5.99	0	25
Child Literacy Interest Subscale	.71	.18	.33	.99

\* $p < .05$ , \*\* $p < .01$

Table 4.3

*Means, Standard Deviations, and Range for Child Outcomes and Predictor Variables for 4-year-old children (N=74).*

Variable	<i>M</i>	<i>SD</i>	<i>Min</i>	<i>Max</i>
Outcome Variables				
Receptive Vocabulary (PPVT)	90.03	14.27	51	117
Oral Expression	9.53	4.33	0	18
Letter Knowledge (PALS)	12.79	10.17	0	26
Name Writing (PALS)	2.54	1.32	0	5
Print Knowledge (PALS)	4.95	2.37	0	10
Predictor Variables				
Book Exposure Subscale	.65	.17	.14	.96
Parental Literacy Teaching Subscale	.66	.18	.18	1
EMERGE Library Visits	7.03	7.33	0	25
Child Literacy Interest Subscale	.76	.15	.42	.99

\* $p < .05$ , \*\* $p < .01$

Table 4.4

*Means, Standard Deviations, and Range for Child Outcomes and Predictor Variables for 4-year-old children (N=24).*

Variable	<i>M</i>	<i>SD</i>	<i>Min</i>	<i>Max</i>
Outcome Variables				
Receptive Vocabulary (PPVT)	90.25	14.30	60	113
Oral Expression	12.58	5.48	1	19
Letter Knowledge (PALS)	19.80	7.57	0	26
Name Writing (PALS)	3.79	1.38	0	5
Print Knowledge (PALS)	7.04	2.03	2	10
Predictor Variables				
Book Exposure Subscale	.68	.17	.22	.96
Parental Literacy Teaching Subscale	.67	.16	.35	.99
EMERGE Library Visits	6.20	7.58	0	21
Child Literacy Interest Subscale	.77	.11	.51	1

\* $p < .05$ , \*\* $p < .01$



Table 5.1

*Intercorrelations for Child Outcome Variables (N=146).*

Variable	RV	OE	NW	LK	PA
Receptive Vocab. (RV)	1.00	.37**	.15*	.19*	.34**
Oral Expression (OE)		1.00	.20**	.16*	.43**
Name Writing (NW)			1.00	.62**	.52**
Letter Knowledge (LK)				1.00	.40**
Print Knowledge (PA)					1.00

\* $p < .05$ , \*\* $p < .01$

Table 5.2

*Intercorrelations for Predictor Variables (N=146).*

Variable	CE	CA	BE	PT	LV	CI
Class Environment (CE)	1.00	-.16*	-.01	-.04	.08	-.04
Child Age (CA)		1.00	.02	.07	.06	.12
Book Exposure (BE)			1.00	.69**	.05	.63**
Parent Teachings (PT)				1.00	.04	.73**
Library Visits (LV)					1.00	.14*
Child Interest (CI)						1.00

\* $p < .05$ , \*\* $p < .01$

Table 5.3

*Intercorrelations between Child Outcome Variables and Predictor Variables (N=146).*

Variable	Classroom Environment	Child Age	Book Exposure	Parent Teachings	Library Visits	Child Interest
Receptive	-.00	-.03	.15*	.02	.13	.00
Vocabulary						
Oral Expression	.14*	.33**	.14*	.04	.10	-.05
Name Writing	-.03	.53**	-.03	.02	.11	.18*
Letter Knowledge	-.07	.38**	.02	.01	.14*	.11
Print Knowledge	-.03	.51**	.09	.05	.10	.08

\* $p < .05$ , \*\* $p < .01$

### **Analysis 3: Book Exposure and Parental Literacy Teaching Hierarchical Regression**

In this analysis, the relationship between the first two factors from the parent survey - book exposure and parental literacy teachings - were analyzed to see whether and to what extent they predict the measured outcome variables: oral language, alphabet knowledge and print awareness. The assumptions of linearity, normally distributed errors, and uncorrelated errors were checked and met for all hierarchical regression analyses.

The average scores for each question subscale were used to solve the issue of missing data for the hierarchical regression analyses. Some of the parents did not answer all of the questions in the survey. To maintain a good sized sample, an average of the subscale of the individual parents' responses (used the 3 subscales created from the factor analysis) was used to replace the missing data.

**Oral Language:** Two different hierarchical regression analyses were conducted to assess whether and to what extent children's book exposure and parental teaching of emergent literacy skills differentially predict oral language while controlling for child age and the Head Start classroom literacy environment. Oral language was assessed by two measures: the PPVT Standard Score that assessed receptive vocabulary and an oral story retelling score that assessed oral expression.

The first analysis regarded receptive vocabulary. Table 6.1 represents which variables contribute most to predicting *receptive vocabulary*. Age was not controlled for since age is inherently controlled for in the PPVT standard scores. When Head Start classroom literacy environment score was entered alone, it did not significantly predict receptive vocabulary,  $F(1, 144) = .00, p = .98$ , adjusted  $R^2 = -.01$ . When the other variables

were added, they significantly improved the prediction,  $R^2$  change = .06,  $F(3, 141) = 3.38$ ,  $p = .02$ . The entire group of variables significantly predicted receptive vocabulary,  $F(4, 141) = 2.53$ ,  $p = .04$ , adjusted  $R^2 = .04$ . As indicated by the  $R^2$ , 4% of the variance in receptive vocabulary can be predicted by book exposure, parental literacy teaching, and EMERGE library visits. The beta weights and significance values, presented in table 6.1, indicate which variables contribute the most to predicting receptive vocabulary, when Head Start classroom literacy environment, book exposure, parental literacy teaching, and EMERGE library visits are entered together as predictors. With this combination of predictors, book exposure has the highest beta (.31) with parental literacy teaching having the second highest beta (-.24). Both of these variables significantly predicted receptive vocabulary with parental literacy teaching negatively predicting receptive vocabulary.

Since book exposure and parental literacy teaching are highly positively correlated with each other, it was suspected that the negative beta finding with parental literacy teaching may be due to that variable acting as a suppressor of the other variables in the model. It was decided to complete another set of regression analyses separating the book exposure variables and the parent teaching variables into two separate regression analysis. Also, since class literacy environment did not significantly predict receptive vocabulary, this control variable was also deleted for the next set of analyses.

Table 6.2 represents which book exposure variables contribute most to predicting *receptive vocabulary*. Age was not controlled for since age is inherently controlled for in the PPVT standard scores. The entire group of variables did not significantly predict receptive vocabulary,  $F(2, 143) = 2.85$ ,  $p = .06$ , adjusted  $R^2 = .03$ . As indicated by the  $R^2$ , 3% of the variance in receptive vocabulary can be predicted by the book exposure

subscale and EMERGE library visits. The beta weights and significance values, presented in table 6.2, indicate which variables contribute the most to predicting receptive vocabulary, when book exposure and EMERGE library visits are entered together as predictors. With this combination of predictors, book exposure has the highest beta (.15) with EMERGE library visits having the second highest beta (.12). Both of these variables did not significantly predict receptive vocabulary in this analysis.

Table 6.3 represents the parent literacy teachings prediction of *receptive vocabulary*. Age was not controlled for since age is inherently controlled for in the PPVT standard scores. Parent literacy teaching did not significantly predict receptive vocabulary,  $F(1, 144) = .03$ ,  $p = .85$ , adjusted  $R^2 = -.01$ . The beta weight (-.02) and significance value, presented in table 6.3, indicate that parent literacy teaching had no significant prediction of receptive vocabulary.

Table 6.1

*Hierarchical Multiple Regression Analysis Summary Predicting Receptive Vocabulary from Book Exposure Subscale, Parental Literacy Teaching subscale, and EMERGE Library Visits when Controlling for Head Start Environment (N=146).*

Variable	<i>B</i>	<i>SEB</i>	$\beta$	$R^2$	$\Delta R^2$
Step 1				.00	.00
Head Start Environment	-0.00	0.10	-.00		
Constant	89.85	5.02			
Step 2				.07	.07
Head Start Environment	-0.02	0.09	-.02		
Book Exposure Subscale	24.58	9.00	.31**		
Parental Teaching Subscale	-19.08	9.19	-.24*		
EMERGE Library Visits	0.25	0.16	.12		
Constant	85.39	6.88			

\* $p < .05$ , \*\* $p < .01$

Table 6.2

*Multiple Regression Analysis Summary Predicting Receptive Vocabulary from Book*

*Exposure Subscale and EMERGE Library Visits (N=146).*

Variable	<i>B</i>	<i>SEB</i>	$\beta$
Book Exposure Subscale	11.64	6.53	.15
EMERGE Library Visits	0.24	0.16	.12
Constant	80.46	4.52	

\* $p < .05$ , \*\* $p < .01$

Table 6.3

*Simple Regression Analysis Summary Predicting Receptive Vocabulary from Parental*

*Literacy Teaching Subscale (N=146).*

Variable	<i>B</i>	<i>SEB</i>	$\beta$
Parental Teaching Subscale	-1.25	6.77	-.02
Constant	90.46	4.57	

\* $p < .05$ , \*\* $p < .01$

The second hierarchical regression analysis assessing oral language used an oral retelling task as a measure of *oral expression*. When the Head Start classroom literacy environment score and age was entered in the regression model, they significantly predicted oral expression,  $F(2, 143) = 9.23, p < .001$ , adjusted  $R^2 = .10$ . The beta weights and significant values presented in table 7.1 indicate that only age significantly predicted oral expression in the first model. When the other variables were added into the second model, they did not significantly improve the prediction,  $R^2$  change = .04,  $F(3, 140) = 1.99, p = .12$ . However, the entire group of variables significantly predicted receptive vocabulary,  $F(5, 140) = 4.96, p < .001$ , adjusted  $R^2 = .12$ . As indicated by the  $F$  test,  $R^2$ , 12% of the variance in receptive vocabulary can be predicted by the predictors. The beta weights and significance values, presented in table 7.1, indicate which variables contribute the most to predicting oral expression, when Head Start classroom literacy environment, child age, book exposure, parental literacy teaching, and EMERGE library visits are entered together as predictors. With this combination of predictors, age had the highest beta (.31) with book exposure having the second highest beta (.23). Both of these variables significantly predicted oral expression.

Since book exposure and parental literacy teaching are highly positively correlated with each other, it was decided to complete another set of regression analyses separating the book exposure variables and the parent teaching variables into two separate regression analysis. Also, since class literacy environment did not significantly predict oral expression, this control variable was also deleted for the next set of analyses.

Table 7.2 represents which book exposure variables contribute most to predicting *oral expression*. When the child age was entered in the regression model alone, it



significantly predicted oral expression,  $F(1, 144) = 17.04, p < .001$ , adjusted  $R^2 = .10$ .

The beta weights and significant values presented in table 7.2 indicate that age significantly predicted oral expression in the first model. When the book exposure variables were added into the second model, they did not significantly improve the prediction,  $R^2$  change = .02,  $F(2, 142) = 1.95, p = .15$ . However, the entire group of variables significantly predicted oral expression,  $F(3, 142) = 7.06, p > .001$ , adjusted  $R^2 = .11$ . As indicated by the  $R^2$ , 11% of the variance in oral expression can be predicted by the predictors. The beta weights and significance values, presented in table 7.2, indicate which variables contribute the most to predicting oral expression, when child age, book exposure subscale, and EMERGE library visits are entered together as predictors. With this combination of predictors, age had the highest beta (.32) and was the only variable that significantly predicted oral expression.

Table 7.3 represents the parent literacy teaching variable's contribution to predicting *oral expression*. When the child age was entered in the regression model alone, it significantly predicted oral expression,  $F(1, 144) = 17.04, p < .001$ , adjusted  $R^2 = .10$ . The beta weights and significant values presented in table 7.3 indicate that age significantly predicted oral expression in the first model. When the parent literacy teaching variable was added into the second model, it did not significantly improve the prediction,  $R^2$  change = .00,  $F(1, 143) = .07, p = .80$ . However, the entire group of variables significantly predicted oral expression,  $F(2, 143) = 8.50, p > .001$ , adjusted  $R^2 = .11$ . As indicated by the  $R^2$ , 11% of the variance in oral expression can be predicted by the predictors. The beta weights and significance values, presented in table 7.3, indicate which variables contribute the most to predicting oral expression, when child age and

parent literacy teachings are entered together as predictors. With this combination of predictors, age had the highest beta (.32) and was the only variable that significantly predicted oral expression.

Table 7.1

*Hierarchical Multiple Regression Analysis Summary Predicting Oral Expression from Book Exposure Subscale, Parental Literacy Teaching subscale, and EMERGE Library Visits when Controlling for Head Start Environment and Child Age (N=146).*

Variable	<i>B</i>	<i>SEB</i>	$\beta$	$R^2$	$\Delta R^2$
Step 1				.11	.11
Head Start Environment	-0.04	0.03	-.09		
Child Age (Months)	0.20	0.05	.31**		
Constant	1.17	3.33			
Step 2				.15	.04
Head Start Environment	-0.04	0.03	-.10		
Child Age (Months)	0.20	0.05	.31**		
Book Exposure Subscale	6.31	2.94	.23*		
Parental Teaching Subscale	-4.08	3.01	-.15		
EMERGE Library Visits	0.06	0.05	.08		
Constant	-0.38	3.60			

\* $p < .05$ , \*\* $p < .01$

Table 7.2

*Hierarchical Multiple Regression Analysis Summary Predicting Oral Expression from Book Exposure Subscale and EMERGE Library Visits when controlling for Child Age (N=146).*

Variable	<i>B</i>	<i>SEB</i>	$\beta$	$R^2$	$\Delta R^2$
Step 1				.11	.10
Child Age (Months)	0.21	0.05	.33**		
Constant	-1.20	2.65			
Step 2				.13	.11
Child Age (Months)	0.21	0.05	.32**		
Book Exposure Subscale	3.58	2.13	.13		
EMERGE Library Visits	0.05	0.05	.08		
Constant					

\* $p < .05$ , \*\* $p < .01$

Table 7.3

*Hierarchical Multiple Regression Analysis Summary Predicting Oral Expression from Parent Literacy Teachings when controlling for Child Age (N=146).*

Variable	<i>B</i>	<i>SEB</i>	$\beta$	$R^2$	$\Delta R^2$
Step 1				.11	.10
Child Age (Months)	0.21	0.05	.33**		
Constant	-1.20	2.65			
Step 2				.11	.09
Child Age (Months)	0.21	0.05	.32**		
Parent Literacy teachings	0.56	2.20	.02		
Constant	-1.52	2.95			

\* $p < .05$ , \*\* $p < .01$

**Alphabet Knowledge:** A hierarchical regression analysis was conducted to assess whether and to what extent children's book exposure, and parental teaching of emergent literacy skills differentially predict children's *letter knowledge* while controlling for age and the Head Start classroom literacy environment. When the Head Start classroom literacy environment score and age were entered in the first model, it did significantly predict children's letter knowledge,  $F(2, 143) = 11.87, p < .001$ , adjusted  $R^2 = .13$ . When the other variables were added in the second model, it did not significantly improve the prediction,  $R^2 \text{ change} = .02, F(3, 140) = .97, p = .41$ . However, the entire group of variables significantly predicted letter knowledge,  $F(5, 140) = 5.33, p < .001$ , adjusted  $R^2 = .13$ . As indicated by the  $R^2$ , 13% of the variance in letter knowledge can be predicted by the predictors. The beta weights and significance values, presented in table 8.1, indicate which variables contribute the most to predicting letter knowledge, when Head Start classroom literacy environment, age, book exposure, parental literacy teaching, and EMERGE library visits are entered together as predictors. With this combination of predictors, age had the highest beta (.37) and was the only variable that significantly predicted letter knowledge.

Since book exposure and parental literacy teaching are highly positively correlated with each other, it was decided to complete another set of regression analyses separating the book exposure variables and the parent teaching variables into two separate regression analysis. Also, since class literacy environment did not significantly predict oral alphabet knowledge, this control variable was also deleted for the next set of analyses.

Table 8.2 represents which book exposure variables contribute most to predicting *alphabet knowledge*. When the child age was entered in the regression model alone, it significantly predicted alphabet knowledge,  $F(1, 144) = 23.87, p < .001$ , adjusted  $R^2 = .14$ . The beta weights and significant values presented in table 8.2 indicate that age significantly predicted alphabet knowledge in the first model. When the book exposure variables were added into the second model, they did not significantly improve the prediction,  $R^2 \text{ change} = .01, F(2, 142) = 1.20, p = .30$ . However, the entire group of variables significantly predicted alphabet knowledge,  $F(3, 142) = 8.78, p > .001$ , adjusted  $R^2 = .16$ . As indicated by the  $R^2$ , 16% of the variance in alphabet knowledge can be predicted by the predictors. The beta weights and significance values, presented in table 8.2, indicate which variables contribute the most to predicting alphabet knowledge, when child age, book exposure subscale, and EMERGE library visits are entered together as predictors. With this combination of predictors, age had the highest beta (.37) and was the only variable that significantly predicted alphabet knowledge.

Table 8.3 represents parent literacy teachings contribution to predicting *alphabet knowledge*. When the child age was entered in the regression model alone, it significantly predicted alphabet knowledge,  $F(1, 144) = 23.87, p < .001$ , adjusted  $R^2 = .14$ . The beta weights and significant values presented in table 8.3 indicate that age significantly predicted alphabet knowledge in the first model. When the parent literacy teaching variable was added into the second model, it did not significantly improve the prediction,  $R^2 \text{ change} = .00, F(1, 143) = .14, p = .71$ . However, the entire group of variables significantly predicted alphabet knowledge,  $F(2, 143) = 11.93, p > .001$ , adjusted  $R^2 = .12$ . As indicated by the  $R^2$ , 12% of the variance in alphabet knowledge can

be predicted by the predictors. The beta weights and significance values, presented in table 8.3, indicate which variables contribute the most to predicting alphabet knowledge, when child age and parent literacy teachings are entered together as predictors. With this combination of predictors, age had the highest beta (.38) and was the only variable that significantly predicted alphabet knowledge.



Table 8.1

*Hierarchical Multiple Regression Analysis Summary Predicting Letter Knowledge from Book Exposure Subscale, Parental Literacy Teaching subscale, and EMERGE Library Visits when Controlling for Head Start Environment and Child Age (N=146).*

Variable	<i>B</i>	<i>SEB</i>	$\beta$	$R^2$	$\Delta R^2$
Step 1				.14	.14
Head Start Environment	-0.01	0.07	-0.01		
Child Age (Months)	0.52	0.11	0.38**		
Constant	-13.18	6.93			
Step 2				.16	.01
Head Start Environment	-0.02	0.07	-0.03		
Child Age (Months)	0.51	0.11	0.37**		
Book Exposure Subscale	3.31	6.18	0.06		
Parental Teaching Subscale	-4.34	6.33	-0.07		
EMERGE Library Visits	0.17	0.11	0.12		
Constant	-12.61	7.57			

\* $p < .05$ , \*\* $p < .01$

Table 8.2

*Hierarchical Multiple Regression Analysis Summary Predicting Alphabet Knowledge from Book Exposure Subscale and EMERGE Library Visits when controlling for Child Age (N=146).*

Variable	<i>B</i>	<i>SEB</i>	$\beta$	$R^2$	$\Delta R^2$
Step 1				.14	.14
Child Age (Months)	0.52	0.11	.38**		
Constant	-13.87	5.49			
Step 2				.16	.14
Child Age (Months)	0.51	0.11	.37**		
Book Exposure Subscale	0.39	4.43	.01		
EMERGE Library Visits	0.17	0.11	.12		
Constant	-14.65	6.16			

\* $p < .05$ , \*\* $p < .01$

Table 8.3

*Hierarchical Multiple Regression Analysis Summary Predicting Alphabet Knowledge from Parent Literacy Teachings when controlling for Child Age (N=146).*

Variable	<i>B</i>	<i>SEB</i>	$\beta$	$R^2$	$\Delta R^2$
Step 1				.14	.14
Child Age (Months)	0.52	0.11	.38**		
Constant	-13.87	5.49			
Step 2				.14	.13
Child Age (Months)	0.52	0.11	.38**		
Parent Literacy teachings	-1.72	4.55	-.03		
Constant	-12.88	6.10			

\* $p < .05$ , \*\* $p < .01$

**Print Awareness:** Two different hierarchical regression analyses were conducted to assess whether and to what extent children's book exposure and parental teaching of emergent literacy skills differentially predict print awareness while controlling for age and the Head Start classroom literacy environment. Print awareness was assessed by two measures: PALS name writing score and PALS print knowledge score. The first hierarchical regression analysis was conducted to assess whether and to what extent children's book exposure, and parental literacy teaching of emergent literacy skills differentially predict children's *name writing ability* while controlling for age and the Head Start classroom literacy environment. When the Head Start classroom literacy environment score and age were entered in the first model, it did significantly predict children's name writing,  $F(2, 143) = 29.00, p < .001$ , adjusted  $R^2 = .28$ . When the other parent variables were added in the second model, it did not significantly improve the prediction of name writing,  $R^2 \text{ change} = .01, F(3, 140) = .53, p = .66$ . However, the entire group of variables significantly predicted name writing,  $F(5, 140) = 11.80, p < .001$ , adjusted  $R^2 = .27$ . As indicated by the  $R^2$ , 27% of the variance in name writing can be predicted by the predictors. The beta weights and significance values, presented in table 6.4, indicate which variable contributes the most to predicting name writing when Head Start classroom literacy environment, age, book exposure, parental literacy teaching, and EMERGE library visits are entered together as predictors. With this combination of predictors, age had the highest beta (.54) and was the only variable that significantly predicted name writing ability.

Since book exposure and parental literacy teaching are highly positively correlated with each other, it was decided to complete another set of regression analyses

separating the book exposure variables and the parent teaching variables into two separate regression analysis. Also, since class literacy environment did not significantly predict name writing, this control variable was also deleted for the next set of analyses.

Table 9.2 represents which book exposure variables contribute most to predicting *name writing*. When the child age was entered in the regression model alone, it significantly predicted name writing,  $F(1, 144) = 57.47, p < .001$ , adjusted  $R^2 = .28$ . The beta weights and significant values presented in table 9.2 indicate that age significantly predicted name writing in the first model. When the book exposure variables were added into the second model, they did not significantly improve the prediction,  $R^2$  change = .01,  $F(2, 142) = .83, p = .44$ . However, the entire group of variables significantly predicted name writing,  $F(3, 142) = 19.66, p < .001$ , adjusted  $R^2 = .28$ . As indicated by the  $R^2$ , 28% of the variance in name writing can be predicted by the predictors. The beta weights and significance values, presented in table 9.2, indicate which variables contribute the most to predicting name writing, when child age, book exposure subscale, and EMERGE library visits are entered together as predictors. With this combination of predictors, age had the highest beta (.53) and was the only variable that significantly predicted name writing.

Table 9.3 represents parent literacy teachings contribution to predicting *name writing*. When the child age was entered in the regression model alone, it significantly predicted name writing,  $F(1, 144) = 57.47, p < .001$ , adjusted  $R^2 = .28$ . The beta weights and significant values presented in table 9.3 indicate that age significantly predicted name writing in the first model. When the parent literacy teaching variable was added into the second model, it did not significantly improve the prediction,  $R^2$  change = .00,  $F(1, 143) = .05, p = .83$ . However, the entire group of variables significantly predicted name

writing,  $F(2, 143) = 28.57, p > .001$ , adjusted  $R^2 = .28$ . As indicated by the  $R^2$ , 28% of the variance in name writing can be predicted by the predictors. The beta weights and significance values, presented in table 9.3, indicate which variables contribute the most to predicting name writing, when child age and parent literacy teachings are entered together as predictors. With this combination of predictors, age had the highest beta (.54) and was the only variable that significantly predicted name writing.

Table 9.1

*Hierarchical Multiple Regression Analysis Summary Predicting Name Writing from Book Exposure Subscale, Parental Literacy Teaching subscale, and EMERGE Library Visits when Controlling for Head Start Environment and Child Age (N=146).*

Variable	<i>B</i>	<i>SEB</i>	$\beta$	$R^2$	$\Delta R^2$
Step 1				.29	.29
Head Start Environment	0.01	0.01	.06		
Child Age (Months)	0.11	0.02	.54**		
Constant	-3.65	0.93			
Step 2				.30	.01
Head Start Environment	0.01	0.01	.05		
Child Age (Months)	0.11	0.02	.54**		
Book Exposure Subscale	-0.59	0.82	-.07		
Parental Teaching Subscale	0.28	0.86	.03		
EMERGE Library Visits	0.02	0.02	.08		
Constant	-3.42	1.02			

\* $p < .05$ , \*\* $p < .01$

Table 9.2

*Hierarchical Multiple Regression Analysis Summary Predicting Name Writing from Book Exposure Subscale and EMERGE Library Visits when controlling for Child Age*

*(N=146).*

Variable	<i>B</i>	<i>SEB</i>	$\beta$	$R^2$	$\Delta R^2$
Step 1				.29	.28
Child Age (Months)	0.11	0.01	.53**		
Constant	-3.19	0.74			
Step 2				.29	.28
Child Age (Months)	0.11	0.01	.53**		
Book Exposure Subscale	-0.41	0.60	-.05		
EMERGE Library Visits	0.02	0.02	.08		
Constant	-2.98	0.83			

\* $p < .05$ , \*\* $p < .01$



Table 9.3

*Hierarchical Multiple Regression Analysis Summary Predicting Name Writing from*

*Parent Literacy Teachings when controlling for Child Age (N=146).*

Variable	<i>B</i>	<i>SEB</i>	$\beta$	$R^2$	$\Delta R^2$
Step 1				.29	.28
Child Age (Months)	0.11	0.01	.53**		
Constant	-3.19	0.74			
Step 2				.29	.28
Child Age (Months)	0.11	0.01	.54**		
Parent Literacy teachings	-0.14	0.61	-.02		
Constant	-3.11	0.82			

\* $p < .05$ , \*\* $p < .01$

A second hierarchical regression analysis for print awareness was conducted to assess whether and to what extent children's book exposure, and parental teaching of emergent literacy skills differentially predict children's *print knowledge* while controlling for age and the Head Start classroom literacy environment. When the Head Start classroom literacy environment score and age were entered in the first model, it did significantly predict children's print knowledge,  $F(2, 143) = 24.80, p < .001$ , adjusted  $R^2 = .25$ . When the other parent predictor variables were added in the second model, it did not significantly improve the prediction,  $R^2 \text{ change} = .01, F(3, 140) = .75, p = .52$ . However, the entire group of variables did significantly predict print knowledge,  $F(5, 140) = 10.32, p < .001$ , adjusted  $R^2 = .24$ . As indicated by the  $R^2$ , 24% of the variance in print knowledge can be predicted by the predictors (book exposure subscale, EMERGE library visits, and parental literacy teaching of emergent literacy skills subscale). The beta weights and significance values, presented in table 6.5, indicate which variables contribute the most to predicting knowledge, when Head Start classroom literacy environment, age, book exposure, parental literacy teaching, and EMERGE library visits are entered together as predictors. With this combination of predictors, age had the highest beta (.51) and was the only variable that significantly predicted print knowledge.

Since book exposure and parental literacy teaching are highly positively correlated with each other, it was decided to complete another set of regression analyses separating the book exposure variables and the parent teaching variables into two separate regression analysis. Also, since class literacy environment did not significantly predict print knowledge, this control variable was also deleted for the next set of analyses.

Table 10.2 represents which book exposure variables contribute most to predicting *print knowledge*. When the child age was entered in the regression model alone, it significantly predicted print knowledge,  $F(1, 144) = 49.20, p < .001$ , adjusted  $R^2 = .25$ . The beta weights and significant values presented in table 10.2 indicate that age significantly predicted print knowledge in the first model. When the book exposure variables were added into the second model, they did not significantly improve the prediction,  $R^2 \text{ change} = .01, F(2, 142) = 1.02, p = .36$ . However, the entire group of variables significantly predicted print knowledge,  $F(3, 142) = 17.08, p > .001$ , adjusted  $R^2 = .25$ . As indicated by the  $R^2$ , 25% of the variance in print knowledge can be predicted by the predictors. The beta weights and significance values, presented in table 10.2, indicate which variables contribute the most to predicting print knowledge, when child age, book exposure subscale, and EMERGE library visits are entered together as predictors. With this combination of predictors, age had the highest beta (.50) and was the only variable that significantly predicted print knowledge.

Table 10.3 represents parent literacy teachings contribution to predicting *print knowledge*. When the child age was entered in the regression model alone, it significantly predicted print knowledge,  $F(1, 144) = 49.20, p < .001$ , adjusted  $R^2 = .25$ . The beta weights and significant values presented in table 10.3 indicate that age significantly predicted print knowledge in the first model. When the parent literacy teaching variable was added into the second model, it did not significantly improve the prediction,  $R^2 \text{ change} = .00, F(1, 143) = .09, p = .77$ . However, the entire group of variables significantly predicted print knowledge,  $F(2, 143) = 24.49, p > .001$ , adjusted  $R^2 = .25$ . As indicated by the  $R^2$ , 25% of the variance in print knowledge can be predicted

by the predictors. The beta weights and significance values, presented in table 10.3, indicate which variables contribute the most to predicting print knowledge, when child age and parent literacy teachings are entered together as predictors. With this combination of predictors, age had the highest beta (.50) and was the only variable that significantly predicted print knowledge.

Table 10.1

*Hierarchical Multiple Regression Analysis Summary Predicting Print Knowledge from Book Exposure Subscale, Parental Literacy Teaching subscale, and EMERGE Library Visits when Controlling for Head Start Environment and Child Age (N=146).*

Variable	<i>B</i>	<i>SEB</i>	$\beta$	$R^2$	$\Delta R^2$
Step 1				.26	.26
Head Start Environment	0.01	0.02	.05		
Child Age (Months)	0.18	0.03	.51**		
Constant	-4.98	1.62			
Step 2				.27	.01
Head Start Environment	0.01	0.02	.05		
Child Age (Months)	0.18	0.03	.51**		
Book Exposure Subscale	1.65	1.45	.11		
Parental Teaching Subscale	-0.86	1.49	-.06		
EMERGE Library Visits	0.03	0.03	.07		
Constant	-5.50	1.78			

\* $p < .05$ , \*\* $p < .01$

Table 10.2

*Hierarchical Multiple Regression Analysis Summary Predicting Print Knowledge from Book Exposure Subscale and EMERGE Library Visits when controlling for Child Age (N=146).*

Variable	<i>B</i>	<i>SEB</i>	$\beta$	$R^2$	$\Delta R^2$
Step 1				.26	.25
Child Age (Months)	0.18	0.03	.51**		
Constant	-4.25	1.29			
Step 2				.27	.25
Child Age (Months)	0.17	0.03	.50**		
Book Exposure Subscale	1.05	1.04	.07		
EMERGE Library Visits	0.03	0.03	.07		
Constant	-4.99	1.45			

\* $p < .05$ , \*\* $p < .01$

Table 10.3

*Hierarchical Multiple Regression Analysis Summary Predicting Print Knowledge from*

*Parent Literacy Teachings when controlling for Child Age (N=146).*

Variable	<i>B</i>	<i>SEB</i>	$\beta$	$R^2$	$\Delta R^2$
Step 1				.26	.25
Child Age (Months)	0.18	0.03	.51**		
Constant	-4.25	1.29			
Step 2				.26	.25
Child Age (Months)	0.17	0.03	.50**		
Parent Literacy teachings	0.31	1.07	.02		
Constant	-4.43	1.43			

\* $p < .05$ , \*\* $p < .0$

#### **Analysis 4: Child Literacy Interest Hierarchical Regression**

In this analysis, the relationship of the child literacy interest factor from the parent survey was analyzed to see whether and to what extent it predicted the measured child outcome variables: oral language, alphabet knowledge and print awareness. The assumptions of linearity, normally distributed errors, and uncorrelated errors were checked and met for all the hierarchical regression analyses.

**Oral Language:** Two different hierarchical regression analyses were conducted to assess whether and to what extent child literacy interest predicts oral language while controlling for age and the Head Start classroom literacy environment. Oral language was assessed by two measures: PPVT Standard Score that assessed receptive vocabulary and an oral story retelling that assessed oral expression.

Table 11 represents the results for the analysis of *receptive vocabulary*. Age was not controlled for because age is inherently controlled in the PPVT standard scores. When Head Start classroom literacy environment score was entered alone, it did not significantly predict receptive vocabulary,  $F(1, 144) = .00, p = .98$ , adjusted  $R^2 = -.01$ . When child literacy interest was added, it did not significantly improve the prediction,  $R^2$  change = .00,  $F(3, 143) = .00, p = .97$ . The addition of the child literacy interest variable did not significantly predict receptive vocabulary,  $F(2, 143) = .00, p = 1.00$ , adjusted  $R^2 = -.01$ . The beta weights and significance values are presented in table 11. None of the variables significantly predicted receptive vocabulary.



Table 11

*Hierarchical Multiple Regression Analysis Summary Predicting Receptive Vocabulary from Child Literacy Interest when Controlling for Head Start Environment and Child Age (N=146).*

Variable	<i>B</i>	<i>SEB</i>	$\beta$	$R^2$	$\Delta R^2$
Step 1				.00	.00
Head Start Environment	-0.00	0.10	-.00		
Constant	89.75	5.02			
Step 2				.00	.00
Head Start Environment	-0.00	0.10	-.00		
Child Literacy Interest	0.32	7.43	.00		
Constant	89.50	7.62			

\* $p < .05$ , \*\* $p < .01$

The second hierarchical regression analysis was conducted to assess whether and to what extent child literacy interest predicts oral expression while controlling for age and the Head Start classroom literacy environment. Table 12 represents which variables contribute most in predicting *oral expression*. When Head Start classroom literacy environment score and age were entered in the first model, they significantly predicted oral expression,  $F(2, 143) = 9.23, p < .001$ , adjusted  $R^2 = .10$ . When the child literacy interest variable was added, it did not significantly improve the prediction,  $R^2$  change = .01,  $F(1, 142) = 1.26, p = .26$ . However, the addition of the child literacy interest variable to the model still significantly predicted oral expression overall,  $F(3, 142) = 6.58, p < .001$ , adjusted  $R^2 = .10$ . The beta weights and significance values are presented in Table 12. Only age significantly predicted oral expression (beta .32).

Table 12

*Hierarchical Multiple Regression Analysis Summary Predicting Oral Expression from Child Reading Interest when Controlling for Head Start Environment and Child Age (N=146).*

Variable	<i>B</i>	<i>SEB</i>	$\beta$	$R^2$	$\Delta R^2$
Step 1				.11	.11
Head Start Environment	-0.04	0.03	-.09		
Child Age (Months)	0.20	0.05	.31**		
Constant	1.17	3.33			
Step 2				.12	.01
Head Start Environment	-0.04	0.03	-.10		
Child Age (Months)	0.21	0.05	.32**		
Child Literacy Interest	-2.70	2.4	-.09		
Constant	2.86	3.65			

\* $p < .05$ , \*\* $p < .01$

**Alphabet Knowledge:** A hierarchical regression analysis was conducted to assess whether and to what extent child literacy interest predicts *letter knowledge* while controlling for age and the Head Start classroom literacy environment. Table 13 represents which variables contribute most to predicting letter knowledge. When Head Start classroom literacy environment score and age were entered in the first model, they significantly predicted letter knowledge,  $F(2, 143) = 11.87, p < .001$ , adjusted  $R^2 = .14$ . When child literacy interest was added, it did not significantly improve the prediction,  $R^2$  change = .00,  $F(1, 142) = .72, p = .40$ . However, the addition of the child literacy interest variable to the model still significantly predicted letter knowledge,  $F(3, 142) = 8.14, p < .001$ , adjusted  $R^2 = .15$ . The beta weights and significance values, presented in table 13 indicate which variables contribute the most to predicting letter knowledge, when Head Start classroom literacy environment, age, and child literacy interest are entered together as predictors. With this combination of predictors, age had the highest beta (.37) and was the only variable that significantly predicted letter knowledge.

Table 13

*Hierarchical Multiple Regression Analysis Summary Predicting Letter Knowledge from Child Reading Interest when Controlling for Head Start Environment and Child Age (N=146).*

Variable	<i>B</i>	<i>SEB</i>	$\beta$	$R^2$	$\Delta R^2$
Step 1				.14	.14
Head Start Environment	-0.01	0.07	-.01		
Child Age (Months)	0.52	0.11	.38**		
Constant	-13.18	6.93			
Step 2				.15	.00
Head Start Environment	-0.01	0.07	-.01		
Child Age (Months)	0.51	0.11	.37**		
Child Literacy Interest	4.26	5.00	.07		
Constant	-15.84	7.61			

\* $p < .05$ , \*\* $p < .01$

**Print Awareness:** Two different hierarchical regression analyses were conducted to assess whether and to what extent child literacy interest predicts print awareness while controlling for age and the Head Start classroom literacy environment. Print awareness was assessed by two measures: PALS name writing score and PALS print knowledge score.

The first hierarchical regression analysis was conducted to assess whether and to what extent child literacy interest predicts children's *name writing* ability while controlling for age and the Head Start classroom literacy environment. Table 14 represents which variables contribute most to predicting name writing. When Head Start classroom literacy environment score and age were entered in the first model, it significantly predicted name writing,  $F(2, 143) = 29.00, p < .001$ , adjusted  $R^2 = .28$ . When the other variables were added, they did not significantly improve the prediction,  $R^2$  change = .01,  $F(1, 142) = 2.61, p = .11$ . However, the addition of the child literacy interest variable to the model did result in a significant prediction of name writing,  $F(3, 142) = 20.42, p < .001$ , adjusted  $R^2 = .29$ . The beta weights and significance values, presented in table 14, indicate which variables contribute the most to predicting name writing ability when Head Start classroom literacy environment, age, and child literacy interest are entered together as predictors. With this combination of predictors, age had the highest beta (.53) and was the only variable that significantly predicted name writing.

Table 14

*Hierarchical Multiple Regression Analysis Summary Predicting Name Writing from Child Reading Interest when Controlling for Head Start Environment and Child Age (N=146).*

Variable	<i>B</i>	<i>SEB</i>	$\beta$	$R^2$	$\Delta R^2$
Step 1				.29	.29
Head Start Environment	0.01	0.01	.06		
Child Age (Months)	0.11	0.02	.54**		
Constant	-3.65	0.93			
Step 2				.30	.01
Head Start Environment	0.01	0.01	.06		
Child Age (Months)	0.11	0.02	.53**		
Child Literacy Interest	1.08	0.67	.11		
Constant	-4.32	1.02			

\* $p < .05$ , \*\* $p < .01$

The second hierarchical regression analysis was conducted to assess whether and to what extent child literacy interest predicts children's *print knowledge* while controlling for age and the Head Start classroom literacy environment. When the Head Start classroom literacy environment score and age were entered in the first model, they significantly predicted children's print knowledge,  $F(2, 143) = 24.80, p < .001$ , adjusted  $R^2 = .25$ . When the other variables were added in the second model, it did not significantly improve the prediction,  $R^2 \text{ change} = .00, F(1, 142) = .07, p = .80$ . However, the entire group of variables significantly predicted print knowledge,  $F(3, 142) = 16.45, p < .001$ , adjusted  $R^2 = .24$ . The beta weights and significance values, presented in table 15, indicate which variables contribute the most to predicting children's print knowledge, when Head Start classroom literacy environment, age, and child literacy interest are entered together as predictors. With this combination of predictors, age had the highest beta (.51) and was the only variable that significantly predicted children's print knowledge.



Table 15

*Hierarchical Multiple Regression Analysis Summary Predicting Print Knowledge from Child Reading Interest when Controlling for Head Start Environment and Child Age (N=146).*

Variable	<i>B</i>	<i>SEB</i>	$\beta$	$R^2$	$\Delta R^2$
Step 1				.26	.26
Head Start Environment	0.01	0.02	.05		
Child Age (Months)	0.18	0.03	.51**		
Constant	-4.98	1.62			
Step 2				.26	.00
Head Start Environment	0.01	0.02	.05		
Child Age (Months)	0.18	0.03	.51**		
Child Literacy Interest	0.30	1.18	.02		
Constant	-5.17	1.79			

\* $p < .05$ , \*\* $p < .01$

### **Analyses 5: T-Tests and One-Way ANOVA of Age and Predictor Variables**

Since age was found to have such a large impact on the children's development of emergent literacy skills development, it was decided to complete some more exploratory analyses examining if there are child age differences regarding the predictor variables of book exposure, EMERGE library visits, parent literacy teachings, and child literacy interest. T-Tests and One-Way ANOVA analyses were conducted.

Table 16 displayed the results of independent T-Tests between 3 year olds and 5 years olds on the predictor variables. No significant differences between 3-year-olds and 5-year-olds were found in Book Exposure ( $t = -.42, p = .68$ ), EMERGE Library Visits ( $t = -.88, p = .38$ ) and Parent Literacy Teachings ( $t = -.71, p = .48$ ) and Child Literacy Interest ( $t = -1.66, p = .10$ ).

One-Way ANOVAs (Table 17) examining the mean difference of predictor variables by child age indicate no significant differences between Book Exposure ( $F = .19, p = .82$ ), EMERGE Library Visits ( $F = 1.53, p = .22$ ), Parent Literacy Teachings ( $F = .24, p = .79$ ), and Child Literacy Interest ( $F = 1.99, p = .14$ ). The results from the t-tests and ANOVA indicate that parents read to their children, engaged them in literacy activities, and the children showed the same level of interest in reading regardless of the age of the child (3, 4, or 5 years old).

Table 16

*Independent T-Tests between Child Age and Book Exposure, Emerge Library Visits,*

*Parent Literacy Teachings, and Child Literacy Interest Variables*

	<i>3-year olds</i> <i>N=48</i>		<i>5-year olds</i> <i>N=24</i>			
Predictor Variable	<i>M</i>	<i>SD</i>	<i>M</i>	<i>SD</i>	<i>df</i>	<i>t</i>
Book Exposure	0.66	0.19	0.68	0.17	70	-0.42
EMERGE Library Visits	4.77	5.99	6.21	7.58	70	-0.88
Parent Literacy Teachings	0.64	0.17	0.67	0.16	70	-0.71
Child Literacy Interest	0.71	0.18	0.77	0.11	70	-1.66

\* $p < .05$ , \*\* $p < .01$

Table 17

*One-Way ANOVA Test between Child Age and Book Exposure, Emerge Library Visits,*

*Parent Literacy Teachings, and Child Literacy Interest Variables (N=146).*

Predictor Variable	Source	SS	df	MS	F
Book Exposure	Between-Group	0.01	2	0.01	0.19
	Within-Group	4.36	143	0.03	
EMERGE Library Visits	Between-Group	148.30	2	74.15	1.53
	Within-Group	6926.38	143	48.44	
Parent Literacy Teachings	Between-Group	0.01	2	0.01	0.24
	Within-Group	4.17	143	0.03	
Child Literacy Interest	Between-Group	0.10	2	0.05	1.99
	Within-Group	3.42	143	0.02	

\* $p < .05$ , \*\* $p < .01$

## **CHAPTER 5: DISCUSSION**

In this chapter, the results will be summarized and information provided about their implications. The first section will consist of a review of the research questions and hypothesizes. A discussion of the results of the current study along with whether and how these results compare to the hypotheses and previous research will follow. The last sections will consist of implications for practice and possibilities for future research, as well as limitations of this study.

### **Research Questions and Hypotheses**

The primary goal of the current study was to examine the impact of the home literacy environment on preschool aged children's emergent literacy skills. This question is important because children's development of reading skills may be largely determined by their early home environment, and their access to literary information may be a determinant of their success in school. Parental involvement at an early age in children's literacy development has been shown to be important for school success (Dearing, Simpkins, Krieder, & Weiss, 2006; Leslie & Allen, 1999; Mantzicopoulos, 1997; and Rush, 1999). It was hypothesized that the parental reports of their children's exposure to books and teaching children explicit emergent literacy skills during shared book reading and in other settings would predict different emergent literacy outcomes. It was further predicted that children's book exposure would only predict receptive vocabulary and oral expression whereas parental teachings during shared book reading and separate from shared book reading were expected to predict alphabet knowledge and print awareness but not the oral language abilities. This prediction was based on prior research that had found similar differential findings (see Sénéchal's, 2006; Hood et al., 2008).

Another goal of the study included exploring the impact of child interest in reading on predicting emergent literacy outcomes such as oral language, alphabet knowledge, and print awareness. Because there has been limited research conducted on the variable of child interest of reading and literacy activities for preschool aged children, analyses conducted with this family involvement variable as a predictor were exploratory.

### **Discussion of Results**

The first research question in the current study examined whether and to what extent children's book exposure, quality of shared book reading, and parental teaching of emergent literacy skills differentially predict emergent literacy outcomes, including oral language, alphabet knowledge, and print awareness, while controlling for Head Start classroom literacy environment and age. It was predicted that book exposure only predicts receptive vocabulary and oral expression whereas parental teachings during shared book reading and separate from shared book reading predict alphabet knowledge and print awareness but not oral language ability.

First, the factor analysis of the parental survey indicated that the book exposure subscale, quality of shared book reading subscale, and parental teachings of emergent literacy skills subscale were all highly correlated with each other. Therefore, for the hierarchical regression analyses, the quality of shared book reading subscale and parental teachings of emergent literacy skills subscale were combined into one subscale because they appeared to measure a similar construct. The book exposure subscale was kept as a separate subscale even though it was highly correlated with the other two subscales because conceptually it made sense to keep it separate.

Results from the correlational analyses showed that book exposure was significantly correlated with receptive vocabulary and oral expression. Results from the hierarchical regression analyses found that book exposure predicted receptive vocabulary and oral expression and did not predict alphabet knowledge and print awareness as expected. It should be noted though that when the parent literacy teachings and book exposure variables were separated into different regression analyses that no significant findings were found for either independent variable on predicting oral language skills. However, the findings of the current study support the role of frequent shared book reading at home in facilitating preschool children's development of their oral language. The positive relation shown for shared book reading in predicting children's oral language skills is an important result because oral language development is closely associated with children's later reading ability (Griffin, Hemphill, Camp, & Wolf, 2004; NICHD-ECCRN, 2005; Rodriguez & Tamis-LeMonda, 2011; Storch & Whitehurst, 2002). This study finding is consistent with prior research findings by Crain-Thoreson and Dale (1992), Fletcher, Cross, Tanney, Schneider, and Finch (2008), and Whitehurst et al. (1994), who found a similar result regarding the relationship between parents' shared book reading and oral language.

The EMERGE library visits were used as another indicator of book exposure. It was found that EMERGE library visits were significantly correlated with alphabet knowledge suggesting that the more books parents checked out of the library the more advanced letter knowledge the children had. However, this variable did not predict any of the oral language or emergent literacy outcomes. This may be because checking books out the library does not necessary indicate how often the books were read to the children

at home. The book exposure subscale that assessed parental report of shared book reading frequency appears to be a better measure of book exposure based on the results of this study.

However, parental literacy teachings did not predict any of the emergent literacy skills measured (i.e. alphabet knowledge and print awareness) and was actually found to have a negative prediction with receptive vocabulary. Kim (2009) also found that the frequency of parental teaching was negatively related to children's vocabulary skills such that more frequent parental teaching was associated with lower vocabulary scores. These results suggest a bidirectional relationship between parental literacy teachings and children's literacy skills such that parents adjust their teaching in response to their child's literacy acquisition. A number of important studies have demonstrated that modifying shared book reading to incorporate a print-referencing style (i.e., using verbal and nonverbal references to explicitly orient children to print) promotes development of code focused skills (e.g. alphabet knowledge, print awareness) but not language outcomes (Justice & Ezell, 2002; Ziolkowski & Goldstein, 2008). This research finding about parental teaching could also be an anomaly resulting from a relatively limited data set. Also, the parent literacy teaching variable may have been acting as a suppressor to the book exposure variable in the regression model because the parent literacy teaching subscale and the book exposure subscale were highly correlated with each other. Because of this possible suppressor, regression analyses were conducted that separated book exposure and parent literacy teachings for each separate child outcome assessment in regression models. In this regression analysis, parent literacy teachings were found to



not have any prediction on receptive vocabulary. More research needs to be done on parent literacy teachings impact on receptive vocabulary.

This finding regarding the role of parental literacy teaching differs from Sénéchal's (2006) and Hood et al. (2008) research that found that parental literacy teaching predicted alphabet knowledge and print awareness. The findings from the study were expected to extend Sénéchal's (2006) and Hood's et al. (2008) results to children from low-SES families. Sénéchal's (2006) and Hood et al. (2008) found that storybook exposure explained statistically significant unique variance in children's oral language skills but not in their print knowledge. They also found that parental teaching explained statistically significant unique variance in children's print knowledge skills but not in their oral-language skills. This current study reconfirms Sénéchal's (2006) and Hood's et al. (2008) findings that storybook exposure in the home environment contributed to children's oral language skills. However, this current study did not find that parental teaching contributed to children's emergent literacy skills (alphabet knowledge and print awareness) or to their oral language skills.

Why do the results of the current study differ from prior research findings? There are several possible reasons. First, Sénéchal (2006) and Hood et al. (2008) examined an older sample of children. Their participants were in kindergarten and first grade. The results may suggest that the effects of parental teaching of literacy skills are not evident until children are older, perhaps at least 5 years old. Second, Sénéchal (2006) and Hood et al. (2008) conducted longitudinal studies and followed their sample of families for 2 years or more. This current study was only able to follow the students over one school

year so any impact of parental teaching of literacy skills may have not have been potent or strong enough to have an influence on child reading development.

Another reason for the unexpected result that parental literacy teachings did not predict alphabet knowledge is that the conclusions of previous research studies about shared book reading promoting the development of children's letter naming knowledge are mixed. Whereas some evidence supports the idea that being interactive when reading stories to preschool children has shown improvements of those children's sounds and letter knowledge (Frijters, Barron, & Brunello 2000; Justice & Pullen, 2003; Sénéchal, LeFevre, Thomas, & Daley, 1998; Sénéchal & LeFevre, 2002), several studies failed to find significant relationships between adult-child reading and children's letter knowledge (Evans, Shaw, & Bell, 2000; Horner, 2004; Justice & Ezell, 2002). This current study belongs in the latter group. The mixed results of these studies highlight the need for more research on how children learn letter names, as well as the relation between letter naming skills and development of reading skills. Research suggests that young children require both awareness of the alphabet and phonemic elements in words (code focused skills) as well as skills for understanding words in text and for constructing meaning while being read (meaning related skills) (Whitehurst & Lonigan, 1998).

Head Start classroom literacy environment did not significantly predict children's emergent literacy skills. This finding suggests either that the measures of classroom literacy environment are insensitive or inadequate or that classroom literacy environment is not nearly as important as other factors for children's emergent literacy skills. There also may have been a restricted level of variance in the classroom literacy measure. The mean of the Head Start classroom literacy measure was 50.86. No classroom literacy

score was measured below 33 points. Perhaps a better predictor measure of classroom literacy environment would have been a measure that examined teacher quality related to specific aspects of early. For example, a measure that looks at teacher behavior during shared book reading.

The second question in this study examined whether and to what extent child interest in reading, reading engagement, and interest in learning literacy skills predict emergent literacy outcomes such as oral language, alphabet knowledge, and print awareness while controlling for age and Head Start classroom literacy environment. First, the factor analysis of the parental survey showed that most of the questions in the child interest in reading subscale, reading engagement subscale, and interest in learning literacy skills subscale were all highly correlated with each other and thus loaded on all three factors. Therefore, for the hierarchical regression analyses, all three child interest subscales were combined into one child literacy interest subscale because of the overlap among the three subscales (meaning that they measured the same construct). Conceptually the integration of the three measures still made sense for the purpose of the study. The correlational analyses found that child literacy interest was highly correlated with the book exposure and parental literacy teachings. This is similar to results found by Bracken and Fischel (2008), Crain-Thoreson and Dale (1992), and Whitehurst and Lonigan (2001) who found that children's interest was positively correlated with frequency of storybook reading. Even though child literacy interest was not found to predict any emergent literacy predictors, except have a small significant correlation with name writing, some research suggests that early child interest in literacy demonstrate that

preschool attitudes and behaviors toward books and reading have been found to predict later literacy achievement (Scarborough & Dobrich, 1994).

The results from the hierarchical regression analyses found that child literacy interest did not predict oral language, alphabet knowledge, or print awareness. When examining the child literacy interest subscale, the average score was .74, with 1 being the highest possible score. The standard deviation was .16 and the range was from .33 to 1. These scores indicated that most children expressed high interest in reading with little variability among the sample. It appears that the preschool aged children showed a high level of interest in being read to and were engaged in literacy activities, and this interest was there regardless of the children's level of emergent literacy skills or whether they were 3 year old, 4 years old, or 5 years old. The preschool age appears to be a critical age whereby a love of reading and literacy activities can be readily fostered by parent.

As expected, age was found to be a significant predictor of emergent literacy skills. The older the child, the more emergent literacy knowledge (i.e. oral language, print knowledge, and alphabet knowledge) they had. Also, parents read to their children, engaged them in literacy activities, were involved with the EMERGE library, and the children showed high levels of reading interest regardless if the children were 3 years old, 4 years old, and 5 years old.

Another possible reason that parental literacy teaching did not predict alphabet knowledge or print awareness or that child literacy interest did not predict any emergent literacy skills is that each analysis controlled for age and this variable accounted for more of the variance than expected. Age was not always controlled for in previous research of the home literacy environment (i.e. Burgess, 2002; De Jong & Leseman, 2001). In this

study, age was found to predict oral expression, alphabet knowledge, and print awareness. This implies that studies such as Burgess (2002) and De Jong and Leseman (2001) may be detecting age variability rather than actual effects. This study adds to the research by controlling for age, and detecting significant results that are not muddled by the child's development growth.

Others have pointed to the importance of mothers' interactions with their children in book-reading tasks as accounting for many of the successful reading outcomes that stem from book reading experiences. Roberts, Jurgens, and Burchinal (2005) found that the primary caregiver's responsiveness and support of the home environment (emotional and verbal responsivity, acceptance of the child's behavior, organization of the environment, academic and language stimulation, and maternal involvement) with their child was the strongest predictor of 3 to 5 year old children's language and early literacy skills with these variables, predicting over and above the prediction seen with shared book reading frequency, maternal book reading strategies, and child's enjoyment of reading. Parents' interactions and responsiveness to their child during shared book reading is another area of possible research that this current study did not address.

### **Implications**

In this section, the implications of the current results are discussed. There is evidence to suggest many people commonly assume that parents of children from low-income or ethnic minority homes do not value literacy, possess few reading materials, engage in few reading and writing activities, and do not support their children's literacy development (Van Steensel, 2006). This current study suggests that parents from low-income or ethnic minority homes behave differently than what has been assumed or

reported by other researchers. Indications from the current study support low-income and/or ethnic minority parents to be engaged in literacy activities with their children. The average score obtained on the book exposure subscale was .66, which indicates that on average the parents in this study read to their children 3 to 5 times a week. The average score obtained on the parental literacy teaching skills subscale was .65, which suggests that parents also engage in literacy activities with their children 3 to 5 times a week.

The home environment is an important setting for the acquisition of literacy knowledge because children have many opportunities for literacy experiences at home such as observing literacy activities of others, engaging in joint reading and writing activities with other people, and benefiting from teaching strategies that family members use when engaging in literacy activities. Language impairments during the preschool period represent a significant risk factor for developing a reading disability during the elementary school years and beyond (Bishop & Adams, 1990; Roth, Speece, Cooper, & de la Paz, 1996). Children's storybook exposure has been shown by this study to predict oral language development. Parents must be recognized as essential partners in helping all children prepare for the demands of formal schooling and learning to read. Although preschool curricula exist to support these goals, preschool programs cannot carry the responsibility alone. In the U.S. nearly one-third (31%) of four-year-olds are not in center-based childcare or early child education programs (U.S. Department of Education, 2007). Parents are an under-utilized resource. Giving parents more information about how to use shared reading for instructional purposes throughout the preschool years would make children more prepared for formal schooling. Families can become

important influences and resources in their children's development of school readiness and literacy learning.

Reading to preschool aged children requires more than only reading the text. Children need support to be able to understand the complex events as well as relate events to the language used in the story. Young children's experiences with storybooks are more valuable when adults engage them in the story. Children are required to respond, while adults provide them with relevant information. Children's questions and comments to the story are an important component of the interactive procedure. In addition, research has demonstrated that giving children opportunities to respond is an important variable in children's development of reading (Gettinger & Stoiber, 2013). Partridge (2004) lists different strategies parents can use to make the most of shared book reading. Neuman, Hood, and Neumann (2009) describe how one parent successfully scaffolded her young child's emergent writing and letter knowledge in the home. In that case, environmental print (i.e. store signs) provided many rich and meaningful examples for the parent to show that print conveys meaning, print is constructed with letters that have names, and letters make sounds. The parent used a multisensory approach incorporating the tracing of letters and whole body movements, and common household objects to guide the child's learning of letter names, sounds, and shapes. Emergent writing skills were scaffolded by using directional language and by the child copying environmental print. The strategies and examples that are described above may give guidance to parents and teachers on how to provide engaging opportunities for literacy learning in the home environment or in an early educational context.

## **Study Limitations**

The current study provides important information about the home literacy environment of low-income children and their families. However, the study is limited in terms of the generalizability of the findings due to several factors. When contemplating the results of this study, it is essential to consider its limitations, particularly the issue of the home literacy environment defined by parents' self-reported behaviors, multicollinearity, lack of causation, and lack of longitudinal data.

First, data used in the current study are based on parents' self-reported literacy behaviors, and thus the accuracy of these parent reports cannot be determined. If the study had gathered information about the home literacy environment through observations, different and perhaps more significant results regarding the role of parent literacy activities may have been found.

A second limitation is the issue of multicollinearity. The survey subscales were highly correlated with each other thus proving difficult to establish that the measures are truly independent and measure different constructs making it difficult to extract the unique contribution of each variable. Although this was partially addressed by combining closely related subscales, this multicollinearity persists in influencing the results

Another limitation to this study is that regression is a form of correlation and correlation does not prove causation. Relationships can be inferred between variables, but the underlying causal mechanism among the variables cannot be determined. For example, it



is unclear whether children with better vocabulary skills or other individual learner characteristics lead to them being read to more or vice versa. It is likely that these child characteristic and parent response processes are reciprocal in nature, reinforcing and maintaining one another over time. Alternatively, other factors not considered in this study may be responsible for the observed correlations.

The current study was unable to utilize longitudinal data, which would provide critical information regarding children's language and literacy skill development over time due to the home literacy environment. Also, prior performance levels on literacy measures were not controlled for two reasons: 1) Prior performance was highly correlated with age, 2) controlling for prior performance levels cancelled out the effects of the current performance (e.g. if a parent read a lot to their child, both emergent literacy scores could be high thus controlling for the first score would make it look like reading to their child did not affect their reading development).

### **Directions for Future Research**

A great deal of reading development of children occurs before they enter formal school settings. Although the results of the study did not indicate significant results between the home literacy environment and emergent literacy skills (i.e. print awareness and alphabet knowledge), many other studies have found significant results (e.g. Hood et al., 2008; Sénéchal et al., 1998; Sénéchal & Lefevre, 2002). The home literacy environments relation to emergent literacy development remains an important area of research, especially with low-income families because children with low SES status continue to underperform in American schools. In this section, several considerations should guide future research.

As mentioned previously, one possibility for the lack of significant results in this study is the unreliability of the parents reported answers on the questionnaire. Further work is needed to determine the factors that motivate parents to engage in more formal literacy teachings over storybook reading. Longitudinal studies that extend into the children's formal schooling combined with both self-report and observational measures are needed to clarify the home literacy environment relationship to different literacy and language outcomes. This study only examined one year of preschool aged development and from these observations, it is recommended that future studies examine multiple years. This study also did not examine phonological awareness, which may be an important link to emergent literacy skills and reading development (e.g., see Lonigan, et al., 1998; Dickinson et al., 2003; Muter & Diethelm, 2001). Future studies should incorporate measures of phonological awareness.

Parental factors may also influence the type of practices engaged in and their effectiveness in promoting children's literacy development. Differences in parents' own literacy skills and interest levels may also contribute to the differences in practices engaged in and their effects on their children's reading development. Perhaps future studies could be performed that attempt to measure the effects of these other parental factors. In addition, there may be other influences in the home literacy environment beside parents' involvement that can effect children's emergent reading development. In the current study, questions were not asked about sibling or other relatives who may also have read or engaged in literacy activities with the children assessed. Incorporating such questions into future studies may provide insight into the effects of other family members on children's reading development.

As previously mentioned, another factor that may be important, but not addressed by the current study, is the emotional quality of the parent-child interactions (e.g. see de Jong & Leseman, 2001; Roberts, Jurgens, & Burchinal, 2005). It is possible that unless the parent feels comfortable and competent engaging the child in literacy practices, the social-emotional quality will be less than optimal, and the child outcomes may be less satisfactory. This is another way that parents' literacy skills and interest levels might be related to children's literacy outcomes. Thus, another avenue for future study could be the emotional quality of parent-child interactions.

Even though significant results were found between the home literacy environment and oral language development more research should be conducted. The quantitative nature of the present study makes it difficult to compare results to literature that have taken a qualitative approach. As such, the links found between the home literacy environment and oral language development may represent a minimal model of a much more complex web of parent-child literacy interactions. On the other hand, more quantitative results are still needed in this area of research to allow for accurate identifications of these complex interactions. More research needs to be done that examines the differences between meaning related (i.e. oral language) and code related (i.e. print awareness and alphabet knowledge) and how these differentially predict children's reading development.

More research needs to be conducted with low-income, ethnic minority or linguistically diverse families of young children. The results from the current study suggest that shared book reading at home for preschool children is important for their development of oral language skills. Storybook reading has the potential to promote oral

language development among children who may be at risk for reading difficulties and, in turn, reduce the number of children who fail to achieve skilled reading in the elementary grades. This study elucidates the ways in which the home literacy environment and book exposure for young children predicts reading success – specifically oral language development for children from low-income or ethnic minority homes. The results of this investigation have provided important implications and recommendations regarding parental involvement in children's literacy education.

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## APPENDIX A: HOME LITERACY ENVIRONMENT QUESTIONNAIRE

### PARENTS, CHILDREN, AND EARLY READING

**FIRST, we are interested in what YOU do with your child.**

**PLEASE ANSWER QUESTIONS HONESTLY**

**HOW OFTEN DID YOU or SOMEONE at home in a TYPICAL WEEK:**

	<b>Daily</b> 6 - 7 times	<b>Sometimes</b> 3 - 5 times	<b>Few Times</b> 1 - 2 times	<b>Never</b>
Read a book or story to your child at bedtime	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Read or tell a story to your child at other times beside bedtime	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Sing songs or recite nursery rhymes with your child	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Do play activities (such as a puppet or toy animals) or play actions to extend the story you read or told	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Do "finger play" songs or games with your child (such as "Itsy Bitsy Spider")	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Make up stories, poems, or silly words	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Make up rhyming words with your child (such as cat-zat)	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Sing the ABCs with your child	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Have back-and-forth conversations with your child about books or activities	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Find the first letter of your child's name in everyday print, like signs or ads (such as in McDonalds, or Walmart)	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Count the number of syllables in words	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Print words or provide your child with pencils, markers or other materials to write or pretend to write	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Look at other printed material with your child, such as comics, magazines, or newspaper ads	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>

**We are interested in what YOU do with your child when reading books.**  
**WHEN READING BOOKS with your child, how**  
**often did you or someone at home:**

	<b>Often</b> 6 - 7 times	<b>Sometimes</b> 3 - 5 times	<b>Few Times</b> 1 - 2 times	<b>Never</b>
Read the title page or cover	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Ask your child to "turn the page"	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Read the names of the author and/or illustrator	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Ask your child to point to the title, author, and/or illustrator	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Tell the story in your own words	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Point to and name pictures as you read	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Point to letters and name them	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Point to words in the book as you read	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Ask your child to find letters, especially in his/her name, and name them	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Ask your child to label or describe pictures ("What's this?")	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Ask your child to point to pictures ("Where is the ____?")	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Ask your child to point to a word ("Can you find the word <u>zoo</u> ?")	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Ask your child to read a word ("What does this word say?")	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Read incorrectly and wait for your child to correct you	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Ask child what will happen next	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Ask your child to explain what happened or why something happened	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
	<b>Often</b> 6 - 7 times	<b>Sometimes</b> 3 - 5 times	<b>Few Times</b> 1 - 2 times	<b>Never</b>



The next set of questions are about your **CHILD**.

In the last week, **HOW OFTEN DID YOUR CHILD . . .**

	<b>Daily</b> 6 - 7 times	<b>Sometimes</b> 3 - 5 times	<b>Few Times</b> 1 - 2 times	<b>Never</b>
Reads or looks at books by him or herself	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Recites nursery rhymes	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Retells stories from TV, movies, videos, or books	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Finds the first letter of his/her name in everyday print (such as signs, ads, magazines)	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Pretends to read books	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Points to and reads familiar letters or words (in books, on signs, etc.)	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Draws, writes, or pretends to write	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Asks you to read books to him/her	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Listens quietly as someone reads	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Enjoys being read to (doesn't try to leave while you read)	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Asks "What does this say?" when looking at books, signs, or other printed materials	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Turns pages of a book	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Reads the title or cover of a story	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Reads the page numbers of a book	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Finds words with the same letters as his/her name	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Says "The End" at end of a story	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Points to pictures in a book	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>

Labels pictures of objects in a book	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Retells story while turning pages of a book	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Guesses what will happen next of a story	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Asks you questions or makes comments about the story	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Asks you, "What does this say?"	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Tells you about activities he/she did without you	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Make up nonsense words or pretend to talk in another language	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>

In the last **TWO MONTHS** how often have you or someone done the following:

	<b>Often</b> 6 - 7 times	<b>Sometimes</b> 3 - 5 times	<b>Few Times</b> 1 - 2 times	<b>Never</b>
Given your child a book or magazine as a gift	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Taken your child to visit a library	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Taken your child to the museum, zoo, or other places in the community to learn special things	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Brought home learning materials for your child (books, tapes, puzzles, videos)	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Watched an educational TV program or video with your child	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>

1. Please estimate the number of children's books that are available in the household:  
Check **one**:

- \_\_\_\_\_ None
- \_\_\_\_\_ 1-20 books
- \_\_\_\_\_ 21-40 books
- \_\_\_\_\_ 41-60 books
- \_\_\_\_\_ 61-80 books
- \_\_\_\_\_ more, please estimate \_\_\_\_\_

2. Does your child have a favorite book?    **YES**                      **NO**

    If YES, about how many times have you **read** it to your  
child? \_\_\_\_\_

3. How old was your child when you started reading picture books to him or her?  
(please estimate age) \_\_\_\_\_

**Please tell us the following about you and your child:**

**How old is your child?** ☐ 3 to 3 1/2 ☐ 3 1/2 to 4 ☐ 4 to 4 1/2 ☐ 4 1/2 to 5 ☐ 5 or older

**Does your child have any learning problems?** ☐ Yes ☐ No

**Does your child have any behavior problems?** ☐ Yes ☐ No

**How many children do you have?**

**Are you:** ☐ Married ☐ Single ☐ Divorced

**What is your age?** ☐ Under 21  
☐ 22-30  
☐ 31-40  
☐ 41-50  
☐ 51-60  
☐ Over 60

**My household income is:** ☐ less than \$25,000  
☐ \$25,000-\$40,000  
☐ more than \$40,000

**How much schooling did you complete?**

<input type="checkbox"/> Some high school	<input type="checkbox"/> Graduated from college
<input type="checkbox"/> Graduated from high school	<input type="checkbox"/> Attended or completed graduate school
<input type="checkbox"/> Some college	

**To what ethnic-racial group do you belong?**

☐ Black, African-American  
☐ Hispanic  
☐ Native American  
☐ Southeastern Asian  
☐ Asian or Pacific Islander  
☐ White  
☐ Mixed or Other

**What is your relationship to this child?**

☐ Mother ☐ Father ☐ Grandmother ☐ Grandfather  
☐ Aunt or Uncle ☐ Foster Parent/Guardian

## **APPENDIX B: HOME LITERACY ENVIRONMENT SUBSCALES OF SURVEY QUESTIONS**

### **Core Reading Skill Development (9)**

Read a book to your child at bedtime.

Read or tell a story to your child at other times beside bedtime

Look at other printed material with your child, such as comics, magazines, or newspaper ads

Given your child a book or magazine as a gift

Taken your child to visit a library

Taken your child to the museum, zoo, or other places in the community to learn special things

Brought home learning materials for your child (books, tapes, puzzles, videos)

Watched an educational TV program or video with your child

How old was your child when you started reading picture books to him or her?

### **Parental Literacy Teachings (22)**

Sing ABCs with your child.

Do “finger play” songs or games with your child (such as “Itsy Bitsy Spider”)

Make up stories, poems, or silly words

Make up rhyming words with your child (such as cat-zat)

Have back-and-forth conversations with your child about books or activities

Find the first letter of your child’s name in everyday print, like signs or ads (such as in McDonalds, or Walmart)

Count the number of syllables in words

Do play activities (such as a puppet or toy animals) or play actions to extend the story you read or told

Ask your child to “turn the page”

Read the names of the author and/or illustrator

Ask your child to point to the title, author, and/or illustrator

Tell the story in your own words

Point to letters and name them

Point to words as you read

Ask your child to find letters, especially in his/her name, and name them

Ask your child to label or describe pictures (“What’s this?”)

Ask your child to point to pictures (“Where is the \_\_\_\_?”)

Ask your child to point to a word (“Can you find the word zoo?”)

Ask your child to read a word (“What does this word say?”)

Read incorrectly and wait for your child to correct you

Ask child what will happen next

Ask your child to explain what happened or why something happened

**Child Literacy Interest (24)**

Reads or looks at books by him or herself  
 Pretends to read books  
 Asks you to read books to him/her  
 Listens quietly as someone reads  
 Enjoys being read to (doesn't try to leave while you read)  
 Turns pages of a book  
 Finds the first letter of his/her name in everyday print (such as signs, ads, magazines)  
 Recites nursery rhymes by him or herself  
 Retells stories from TV, movies, videos, or books  
 Draws, writes, or pretends to write  
 Tells you about activities he/she did without you  
 Make up nonsense words or pretend to talk in another language  
 Points to and reads familiar letters or words (in books, on signs, etc.)  
 Finds words with the same letters as his/her name  
 Points to pictures in a book  
 Retells story while turning pages of a book  
 Guesses what will happen next of a story  
 Asks you questions or makes comments about the story  
 Asks you, "What does this say?"  
 Reads the title or cover of a story  
 Reads the page numbers of a book  
 Says "The End" at end of a story  
 Asks "What does this say?" when looking at books, signs, or other printed materials  
 Label pictures of objects in the book

**Deleted Questions That Did Not Load On Any Subscale**

Estimate the number of children's books that are available in the household  
 Print words or provide your child with pencils, markers or other materials to write or pretend to write  
 Sing songs or recite nursery rhymes.  
 Read the title page or cover  
 Point to and name pictures as you read  
 Does your child have a favorite book?

**APPENDIX C: ORAL EXPRESSION TEST**

We are going to take turns telling a story. First, I am going to tell you a story about this book. I want you to listen carefully. Then, it will be your turn to tell the story. After I tell the story, I want you to tell me the very same story. Listen carefully. “Willy Goes Swimming.”

1. One warm morning, Willy the Wombat was playing in the woods. Willy was about to eat an apple when he saw his friend Patty the Platypus dive into the lake. Willy wanted to swim too!
2. Willy made a big splash as he jumped into the water! Oh no! Willy forgot he could not swim. He sunk to the bottom of the lake, and was very scared!
3. Luckily, Patty saw Willy sink, and was there for the rescue! Patty quickly swam to the bottom of the lake, and helped Willy back to land.
4. Finally, Willy made it back to land. He was happy he was safe. Patty showed Willy the correct way to swim, and they practiced together. Willy would never sink again.

Now it is your turn to tell me the story. Tell me everything you remember. Try your best.

Flip through the book and encourage the child to remember as much as possible. Do not provide any prompt or clues for the child as he/she retells the story. If the child cannot remember the story or does not know how to tell it, say:

Do your best. What is happening in the story in this picture? Tell me everything you can remember.

### Scoring Rubric for Oral Expression Task

- I. Introduction (max: 1 point) \_\_\_\_/1  
     A. The child introduces the story. (1 point)  
         Example: One warm morning OR Willy Goes Swimming
- II. Characters (max: 3 points) \_\_\_\_/3  
     A. Child identifies the main character by name or animal type.  
         Example: Willy or wombat (2 points)  
     B. The child identifies a supporting character by name or animal type.  
         Example: Patty or platypus (1 point)
- III. Setting (max: 2 points) \_\_\_\_/2  
     A. The child identifies the setting of the story.  
         Example: In the water, in the lake, in the woods
- IV. Initiating event (max: 2 points) \_\_\_\_/2  
     A. The child's response clearly identifies the initiating event. (2 points)  
         Example: Willy saw Patty swimming and he wanted to swim too.  
         OR  
     B. The child identifies an initiating event with lesser casual effect. (1 point)  
         Example: Willy was eating apples, Willy jump in, etc.
- V. Problem (max: 2 points) \_\_\_\_/2  
     A. The child clearly identifies the problem. (2 points)  
         Example: Willy sinks to the bottom, Willy cannot swim, etc.  
         OR  
     B. The child identifies the problem with less clarity. (1 point)  
         Example: Willy scared.
- VI. Resolution (max: 2 points) \_\_\_\_/2  
     A. The child clearly identifies the resolution.(2 points)  
         Example: Patty jumps in and saves Willy.  
         OR  
     B. The child identifies the resolution with less clarity. (1 point)  
         Example: Willy gets out of the water, Willy learns to swim, etc.

Total: \_\_\_\_/12



### Prompted Task for Reading Comprehension

Note: Do not point to pictures unless indicated by the question.

1. Who was the story about?

Identifies the main character by name or animal type (2 points) OR  
Identifies any supporting characters by name or animal type (1 point)            /2

2. Where did the story happen? Where was Willy in the story?

Identifies the setting of the story (2 points)            /2

3. Why did Willy jump in the water?

Identifies the initiating event (2 points)            /2

4. What was Willy feeling in this picture (point to picture of problem)?

Identifies an emotion that may be appropriate to the situation (1 point)            /1

5. What happened after Willy jumped into the water?

Identifies the problem using any appropriate descriptors            /2

6. How did Willy get out of the water?

Identifies the resolution using any appropriate descriptors            /2

7. What do you think will happen next to Willy (point to last picture)?

The child makes a reasonable prediction about the character            /1

Total:       /12

Grand Total:       /24

**APPENDIX D: HIERARCHICAL REGRESSION ANALYSES USING PRIOR KNOWLEDGE**

Table 1

*Intercorrelations for Prior Knowledge Variables and Age.*

Variable	Vocab	Oral	Name	Letter	Print	Age
Fall Receptive Vocabulary	-	.50**	.21*	.31**	.33**	.05
Fall Oral Story Retelling	-	-	.48**	.46**	.59**	.54**
Fall Name Writing	-	-	-	.65**	.50**	.58**
Fall Letter Knowledge	.-	-	-	-	.56**	.53**
Fall Print Awareness	-	-	-	-	-	.58**
Child Age (Months)	-	-	-	-	-	-

\* $p < .05$ , \*\* $p < .01$

Table 2

*Hierarchical Multiple Regression Analysis Summary Predicting Receptive Vocabulary from Book Exposure Subscale, Parental Literacy Teaching subscale, and EMERGE Library Visits when Controlling for Head Start Environment and Prior Knowledge Receptive Vocabulary (N=130).*

Variable	<i>B</i>	<i>SEB</i>	$\beta$	$R^2$	$\Delta R^2$
Step 1				.40	.40
Head Start Environment	0.03	0.08	.03		
Prior Knowledge RV	0.61	0.07	.64**		
Constant	37.59	7.02			
Step 2				.41	.01
Head Start Environment	0.03	0.08	.03		
Prior Knowledge RV	0.60	0.07	.62**		
Book Exposure Subscale	-4.13	7.64	-.05		
Parental Teaching Subscale	8.18	7.74	.11		
EMERGE Library Visits	0.02	0.13	.01		
Constant	35.96	7.91			

\* $p < .05$ , \*\* $p < .01$

Table 3

*Hierarchical Multiple Regression Analysis Summary Predicting Oral Expression from Book Exposure Subscale, Parental Literacy Teaching subscale, and EMERGE Library Visits when Controlling for Head Start Environment and Prior Oral Expression Knowledge (N=132).*

Variable	<i>B</i>	<i>SEB</i>	$\beta$	$R^2$	$\Delta R^2$
Step 1				.38	.38
Head Start Environment	-0.06	0.03	-.15*		
Prior OE Knowledge	0.59	0.07	.61**		
Constant	8.74	1.46			
Step 2				.39	.01
Head Start Environment	-0.06	0.03	-.15*		
Prior OE Knowledge	0.58	0.07	.59**		
Book Exposure Subscale	3.07	2.79	.11		
Parental Teaching Subscale	-0.55	2.78	-.02		
EMERGE Library Visits	0.02	0.05	.03		
Constant	7.10	2.01			

\* $p < .05$ , \*\* $p < .01$

Table 4

*Hierarchical Multiple Regression Analysis Summary Predicting Letter Knowledge from Book Exposure Subscale, Parental Literacy Teaching subscale, and EMERGE Library Visits when Controlling for Head Start Environment and Prior Letter Naming Knowledge (N=131).*

Variable	<i>B</i>	<i>SEB</i>	$\beta$	$R^2$	$\Delta R^2$
Step 1				.41	.41
Head Start Environment	-0.01	0.06	-.02		
Prior Letter Naming Knowledge	0.75	0.08	.64**		
Constant	9.53	2.95			
Step 2				.44	.03
Head Start Environment	-0.03	0.06	-.03		
Prior Letter Naming Knowledge	0.77	0.08	.65**		
Book Exposure Subscale	2.07	5.60	.04		
Parental Teaching Subscale	0.40	5.55	.01		
EMERGE Library Visits	0.24	0.10	.17*		
Constant	6.84	4.03			

\* $p < .05$ , \*\* $p < .01$

Table 5

*Hierarchical Multiple Regression Analysis Summary Predicting Name Writing from Book Exposure Subscale, Parental Literacy Teaching subscale, and EMERGE Library Visits when Controlling for Head Start Environment and Prior Name Writing Knowledge (N=131).*

Variable	<i>B</i>	<i>SEB</i>	$\beta$	$R^2$	$\Delta R^2$
Step 1				.38	.38
Head Start Environment	0.00	0.01	.00		
Prior Name Writing Knowledge	0.70	0.08	.62**		
Constant	1.62	0.46			
Step 2				.39	.01
Head Start Environment	0.00	0.01	-.00		
Prior Name Writing Knowledge	0.70	0.08	.62**		
Book Exposure Subscale	-0.65	0.87	-.07		
Parental Teaching Subscale	0.77	0.86	.09		
EMERGE Library Visits	0.02	0.02	.08		
Constant	1.45	0.63			

\* $p < .05$ , \*\* $p < .01$

Table 6

*Hierarchical Multiple Regression Analysis Summary Predicting Print Knowledge from Book Exposure Subscale, Parental Literacy Teaching subscale, and EMERGE Library Visits when Controlling for Head Start Environment and Prior Print Knowledge (N=132).*

Variable	<i>B</i>	<i>SEB</i>	$\beta$	$R^2$	$\Delta R^2$
Step 1				.38	.38
Head Start Environment	-0.00	0.01	-.02		
Prior Print Knowledge	0.61	0.07	.61**		
Constant	3.36	0.76			
Step 2				.39	.01
Head Start Environment	-0.00	0.01	-.02		
Prior Print Knowledge	0.61	0.07	.61**		
Book Exposure Subscale	1.30	1.43	.09		
Parental Teaching Subscale	0.03	1.43	.00		
EMERGE Library Visits	0.00	0.02	.01		
Constant	2.50	1.04			

\* $p < .05$ , \*\* $p < .01$

Table 7

*Hierarchical Multiple Regression Analysis Summary Predicting Receptive Vocabulary from Child Literacy Interest when Controlling for Head Start Environment and Prior Receptive Vocabulary Knowledge (N=130).*

Variable	<i>B</i>	<i>SEB</i>	$\beta$	$R^2$	$\Delta R^2$
Step 1				.40**	.40
Head Start Environment	0.03	0.08	.03		
Prior RV Knowledge	0.61	0.07	.64		
Constant	37.59	7.02			
Step 2				.41**	.00
Head Start Environment	0.04	0.08	.03		
Prior RV Knowledge	0.61	0.07	.64		
Child Literacy Interest	4.33	5.86	.05		
Constant	34.12	8.45			

\* $p < .05$ , \*\* $p < .01$



Table 8

*Hierarchical Multiple Regression Analysis Summary Predicting Oral Expression from Child Literacy Interest when Controlling for Head Start Environment and Prior Oral Expression Knowledge (N=132).*

Variable	<i>B</i>	<i>SEB</i>	$\beta$	$R^2$	$\Delta R^2$
Step 1				.38	.38
Head Start Environment	-0.06	0.03	-.15*		
Prior OE Knowledge	0.59	0.07	.61**		
Constant	8.74	1.46			
Step 2				.38	.00
Head Start Environment	-0.06	0.03	-.15*		
Prior OE Knowledge	0.59	0.07	.61**		
Child Literacy Interest	-0.73	2.11	-.02		
Constant	9.31	2.20			

\* $p < .05$ , \*\* $p < .01$

Table 9

*Hierarchical Multiple Regression Analysis Summary Predicting Letter Knowledge from Child Literacy Interest when Controlling for Head Start Environment and Prior Letter Knowledge (N=131).*

Variable	<i>B</i>	<i>SEB</i>	$\beta$	$R^2$	$\Delta R^2$
Step 1				.38	.38
Head Start Environment	-0.01	0.06	-.02		
Prior Letter Knowledge	0.75	0.08	.64**		
Constant	9.53	2.95			
Step 2				.42	.02
Head Start Environment	-0.01	0.06	-.01		
Prior Letter Knowledge	0.75	0.08	.63**		
Child Literacy Interest	8.21	4.30	.13		
Constant	3.21	4.41			

\* $p < .05$ , \*\* $p < .01$

Table 10

*Hierarchical Multiple Regression Analysis Summary Predicting Name Writing from Child Literacy Interest when Controlling for Head Start Environment and Prior Name Writing Knowledge (N=131).*

Variable	<i>B</i>	<i>SEB</i>	$\beta$	$R^2$	$\Delta R^2$
Step 1				.29	.29
Head Start Environment	0.00	0.01	.00		
Prior Name Writing Knowledge	0.70	0.08	.62**		
Constant	1.62	0.46			
Step 2				.40	.02
Head Start Environment	0.00	0.01	.01		
Prior Name Writing Knowledge	0.68	0.08	.61**		
Child Literacy Interest	1.37	0.66	.14*		
Constant	0.59	0.67			

\* $p < .05$ , \*\* $p < .01$

Table 11

*Hierarchical Multiple Regression Analysis Summary Predicting Print Knowledge from Child Literacy Interest when Controlling for Head Start Environment and Prior Print Knowledge (N=132).*

Variable	<i>B</i>	<i>SEB</i>	$\beta$	$R^2$	$\Delta R^2$
Step 1				.38	.38
Head Start Environment	-0.00	0.01	-.02		
Prior Print Knowledge	0.61	0.07	.61**		
Constant	3.36	0.76			
Step 2				.38	.00
Head Start Environment	-0.00	0.01	-.02		
Prior Print Knowledge	0.61	0.07	.61**		
Child Literacy Interest	0.87	1.09	.06		
Constant	2.70	1.12			

\* $p < .05$ , \*\* $p < .01$

## **CURRICULUM VITAE**

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Place of Birth: Salt Lake City, UT

### **Education**

B.S., Westminster College, May 2004

Major: Clinical Psychology

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### **Work Experience**

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School Psychologist at Mount Jordan Middle School

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Pre-Doctoral Internship, August 2009 to July 2010

Illinois School Psychology Internship Consortium (APA Accredited)

Iroquois Special Education Association

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### **Practicum Experience**

Lake Bluff Elementary School, January 2008 to June 2008

Supervisor: Ann Boyd, MS

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Pulaski High School, January 2007 to June 2007

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## Research Experience

EMERGE Project, September 2005 to July 2009  
Supervisor, Karen Stoiber, PhD  
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## Publications

Carroll, C., Olwig, H., & Vasquez, M. (2011, October). Assessment and interventions for students who self-injure. *Communiqué*, 40, 1-3

## Professional Presentations

Stoiber, K.C., Gettinger, M., Carroll, C., & Madrid, M. (2007, April) “*EMERGE*” *Intervention for children who are English Language Learners: Progression of Key Early Literacy Competencies*. Poster session accepted for presentation at the 2007 Annual Convention of the National Association of School Psychologists, New York, NY.