

HOME LITERACY PRACTICES AT 36 MONTHS AND
CHILDREN'S CONCURRENT AND LATER LANGUAGE AND LITERACY SKILLS
FOR FAMILIES LIVING IN RURAL AREAS OF HIGH POVERTY

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ABSTRACT

Eleni Zgourou: Home Literacy Practices at 36 Months and Children's Concurrent and Later Language and Literacy Skills for Families Living in Rural Areas of High Poverty
(Under the direction of Lynne Vernon-Feagans, Ph.D.)

Home literacy practices are important for child language and literacy skills. Most studies, however, focus on families living in urban or suburban areas; yet, little is known about the role of home literacy practices in child language and literacy skills for families living in high-poverty rural communities. The present study examined the associations between home literacy practices at 36 months of age and child language and literacy skills at 36 months, in prekindergarten, and in kindergarten for families residing in high-poverty rural areas. Three types of home literacy practices were examined: child literacy practices, parent literacy practices, and parent-child literacy practices. Results indicated that only the child literacy practices at 36 months were positively associated with child language and literacy skills in all three time points. Implications for practice, policy, and future research are discussed.

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CHAPTER ONE

Introduction

Statement of the Problem

Language and literacy skills emerge long before children begin formal instruction and are important for children's academic success (Whitehurst & Lonigan, 1998). The early language and literacy skills children bring at entry to kindergarten often predict their later academic achievement (Farver, Xu, Lonigan, & Eppe, 2013). Children who enter kindergarten with greater language and literacy skills are more likely to do better in later grades (Duncan et al., 2007). Other children, particularly children from low-income families, reportedly experience more reading difficulties, which are often evident at entry to kindergarten, compared to their middle-income peers (Snow, Burns, & Griffin, 1998; Washington, 2001).

In the United States, nearly half of children under the age of six, about 10.5 million children (45%), live in low-income¹ families and about 5.3 million children (23%) live in poor² families (National Center for Children in Poverty [NCCP], 2017). The percentage of children under the age of six living in poor and low-income families varies by race and region in which they live. African American children, in particular, are disproportionately low-income, with more than half of them (68%), about 2 million, living in low-income families. Given the disheartening national statistics on child poverty and the importance of language and literacy

¹Low-income is defined as *at or below* the 200% of the federal poverty threshold (FPT).

²Poor is defined as *below* the 100% of the FTP.

skills in early years, research studies have placed increased attention on the ways these early language and literacy skills develop and the factors that support early language and literacy acquisition, especially for children who live in poverty (Farver et al., 2013; Snow et al., 1998). Because these skills emerge before children start school, a considerable body of research has acknowledged the role of the home literacy environment in the development of children's early language and literacy skills (Farver et al., 2013; Sénéchal, Pagan, Lever, & Ouellette, 2008).

The home literacy environment encapsulates many different language and literacy experiences to which children are exposed at home. From one point of view, the provision of books, magazines, print and writing materials, as well as literacy and language games provides an opportunity for children to explore the world of literacy (Rodriquez et al., 2009). With access to materials, children can look at books by themselves and engage in their own literacy activities. Beyond merely exposing children to literacy-rich environments, parents can support children's language and literacy development by modeling literacy behaviors, such as reading a newspaper when children are present (Symons, Szuskiewicz, & Bonnell, 1996). From another point of view, parents can play a more active role in children's literacy development by promoting parent-child literacy practices, such as shared book reading, oral storytelling, teaching activities (Bus, van IJzendoorn, & Pelligrini, 1995; Scarborough & Dobrich, 1994), rhyming games (Bryant, MacLean, & Bradley, 1990), and library visits (Payne, Whitehurst, & Angell, 1994; Sénéchal, 2006).

Among these home literacy experiences that enhance children's language and literacy development, the provision of home literacy materials and the practices in which parents engage with their children, such as reading books with them, have received considerable research attention. Several studies have found that the availability of home literacy materials and shared

book reading play a significant role in advancing child language and literacy skills (Raikes et al., 2006; Scarborough & Dobrich, 1994). Less is known, however, about children's independent involvement in their own literacy practices (e.g., looking at books on their own) as well as parents' engagement in their own literacy practices (e.g., reading a newspaper when children are present) in relation to children's early language and literacy skills (Baroody & Diamond, 2012; Farver, Xu, Eppe, & Lonigan, 2006; Scarborough, Dobrich & Hager, 1991).

Moreover, by age three, most typically developing children, regardless of culture, talk well (Hoff, 2009; Kuhl, 2004; Topping, Dekhinet, & Zeedyk, 2013), and therefore, the language and literacy practices children experience by age three are critical (Rodriguez & Tamis-LeMonda, 2011; Zauche, Thul, Mahoney, & Stapel-Wax, 2016). For example, Rodriguez and Tamis-LeMonda (2011) emphasized that the early home literacy environment children experienced between 15 and 37 months of life was a significant predictor of their pre-K vocabulary skills; on the contrary, the later home environment experienced at 60 months was not.

Beyond looking at home literacy practices during a critical developmental period, it is important to consider the community context in which children live. Research has documented that the opportunities and limitations afforded by the community context may foster or hinder academic outcomes (Sharkey & Faber, 2014). In the domain of language and literacy development, most studies have been conducted in urban and suburban areas. Little is known, however, about how home literacy practices operate in rural communities with high poverty rates.

Low-income rural regions are often characterized by limited access to resources, such as libraries, schools, childcare centers, and other health and human services (O'Hare, 2009; Vernon-Feagans, Gallagher & Kainz, 2010). Moreover, residing in such areas may also mean

limited access to theaters, zoos, aquariums, and museums, which could provide opportunities for language and cognitive stimulation (Froiland, 2011). Due to this more limited language and literacy exposure outside of the home, the literacy practices children experience in their homes may be even more important than those children experience in literacy-rich areas (Vernon-Feagans et al., 2013). Therefore, investigating home literacy practices in relation to child emergent language and literacy skills in families residing in rural areas is crucial. In addition, given the considerable percentage (22%) of children under the age of 18 living in rural areas (U.S. Census Bureau, 2016), understanding the role of home literacy practices on young children's language and literacy development becomes imperative.

Taking all the above into consideration, the aim of this study was to examine how home literacy practices at 36 months of age relate to child early and later language and literacy skills in families living in low-income rural areas. Three types of home literacy practices were examined: (a) *child literacy practices*, defined as the practices in which children engage on their own (e.g., looking at books by themselves), (b) *parent literacy practices*, defined as the practices in which parents engage on their own (e.g., reading a newspaper), and (c) *parent-child literacy practices*, defined as the practices in which parents engage with their children (e.g., reading a book together). The focus of this study was on the *frequency* of home literacy practices. In other words, the focus was on the *active agents* (child, parent, and parent-child) participating in the language and literacy-based interactions, and examined whether child literacy practices, parent literacy practices, and parent-child literacy practices contribute to children's early language and literacy abilities above and beyond a number of demographic characteristics.

Guided by a bioecological approach, I examined a model to depict how each of these three types of home literacy practices at 36 months of age impact child language and literacy

outcomes at three time points: at 36 months, in pre-K, and in kindergarten, controlling for a host of demographic and background characteristics.

Theoretical Foundations

The conceptual model that supports this dissertation posits that home literacy practices play a role on child language and literacy skills concurrently and longitudinally in a sample of families living in high poverty rural areas above and beyond demographic variables (see Figure 1). This model has its foundation in the bioecological theory of development, which purports that the *proximal processes*, or the interactive relationships between children and adults in children's immediate environments, are the drivers of human development (Bronfenbrenner & Morris, 2006). Therefore, children's early language and literacy skills are likely influenced by these adult/child relationships. These proximal processes vary as a function of the characteristics of the developing *person*, the environmental *context*, and the *time* in which these processes take place. Furthermore, the bioecological theory emphasizes that proximal processes are not limited to interactions among individuals but they include interactions with objects and symbols as well (Bronfenbrenner & Morris, 2006). With regard to literacy practices, proximal processes could include children's interactions with literacy materials, their literacy-related interactions with parents, and their subjective experience of parents' own literacy practices.

Particularly noteworthy is that these proximal processes have a bidirectional character, meaning one may influence the other (Bronfenbrenner & Morris, 2006). For example, parents' initiation of home literacy practices may influence children's motivation to participate in literacy practices. On the other hand, children's behavior or attitude towards a literacy practice may encourage or impede parents to initiate or continue offering a literacy activity to them. Therefore, a degree of reciprocity is important for an exchange to occur (Bronfenbrenner &

Morris, 2006). For bidirectional interactions to happen between children and objects, such as literacy materials, these objects must invite exploration, manipulation, and attention (Bronfenbrenner & Morris, 2006). For instance, clean, well-maintained, colorful books with pictures that interest young children may attract their attention and make children more willing to interact with them.

Bidirectionality is also reflected in the relationship between child characteristics and home literacy practices (Bronfenbrenner & Morris, 2006). As Sameroff and MacKenzie (2003) argued, interactions between the child and the experiences provided by the family and the broader social environment influence child development (Sameroff & MacKenzie, 2003). For example, child characteristics like temperament may influence parenting behaviors, and parenting behaviors may impact child development as well (Sameroff & MacKenzie, 2003). Similarly, child characteristics appear twice in the bioecological model: (a) as factors that influence the power and direction of the interactive relationships and (b) as child qualities, “*developmental outcomes*” that emerge at a later time point as a result of the interactive relationships (Bronfenbrenner & Morris, 2006). For example, children’s biological characteristics, such as cognitive ability, may influence the kinds and variety of literacy practices children and parents initiate, as well as the frequency with which these literacy practices are employed. In turn, the capacity of child characteristics to influence these interactions may impact later child skills, such as literacy abilities (Bronfenbrenner & Morris, 2006).

The *context* in the bioecological model includes the home environment and the broader community in which children and their families reside (Bronfenbrenner & Morris, 2006). The family setting is one of the first contexts (microsystem), in which children interact with their environment (Bronfenbrenner et al., 1979). Furthermore, the broader community, such as rural

neighborhoods, in which children reside may influence language- and literacy-related interactions and children's language and literacy development. For instance, church or other religious institutions may play an important role on people's lives in rural areas, and in turn on the kinds of literacy practices promoted at home (Teale, 1986). In addition, childcare centers and schools may be potential sources of home literacy practices. Literacy-related interactions occurring in the neighborhood may also influence children's language and literacy skills. In poor rural neighborhoods, however, chances for literacy exposure outside of the home may be slim and accessibility of high quality childcare centers and other educational institutions may be challenging. Such contextual factors may influence child literacy abilities (Clarke, Koziol, & Sheridan, 2017).

Lastly, *time*, during which proximal processes take place, influences child development as well. The timing in which interactions occur matters for child language and literacy development (Rodriquez et al., 2011). In the present study, home literacy practices were measured at 36 months of child age. The bioecological theory emphasizes that in order for interactions to influence child development, they must take place regularly over a period of time. The *frequency* of home literacy practices was measured using a parent-reported tool and distributed to parents when children were 36 months old. At the time of data collection, parents were asked to report how often specific home literacy practices take place in their households over a period of several months.

To summarize, this dissertation is grounded in a bioecological perspective with the aim of expanding our knowledge of the associations between different kinds of home literacy practices (child literacy practices, parent literacy practices, and parent-child literacy practices) at 36 months of child age, on one hand, and children's concurrent and later language and literacy skills

(at 36 months, pre-k, and kindergarten) on the other, focusing on families in high-poverty rural areas. The context of low-income rurality is an important element of the study, given that most studies on home literacy practices concentrated on urban and suburban environments.

Furthermore, rather than simply investigating parent-child literacy practices, this study added child literacy practices and parent literacy practices to examine how their frequency contributes to child language and literacy skills above and beyond a number of background characteristics.

The next chapter (chapter 2) reviews the literature on the impact of each type of home literacy practice on child concurrent and longitudinal language and literacy skills. The methods and results of this study appear in chapters 3 and 4 respectively. A discussion of the findings, limitations of the study, directions for future research, and implications for practice and policy follow in chapter 5.

CHAPTER TWO

Literature Review

Introduction

In order to understand the role of home literacy practices in child language and literacy development, it is necessary to review the early language and literacy skills that are important for later literacy competencies. Next follows a review of studies on how each type of home literacy practices (child literacy practices, parent literacy practices, and parent-child literacy practices) is conceptualized and linked to child language and literacy outcomes. Limitations of the existing literature are discussed last, leading into the context and form of the research question of this study.

Importance of Early Language and Literacy Skills

The acquisition of literacy is a “developmental continuum” that begins before children start school (Whitehurst & Lonigan, 1998, p. 1). According to this perspective, language and literacy skills emerge in the first years of children’s lives and continue to develop across years, influencing one another and fostering more conventional forms of literacy, such as reading and writing (Whitehurst & Lonigan, 1998). Early language skills include the following components: semantics (vocabulary knowledge), syntactic knowledge (grammar), and pragmatics (the use of language involved in discourse and narrative understanding; Storch & Whitehurst, 2002; Vernon-Feagans, 1996). Early literacy skills include print awareness (e.g., understanding that a text is read from left to right), emergent writing (e.g., writing one’s own name), phonological

awareness (e.g., identifying the individual sounds in a word) and alphabetic/grapheme knowledge (e.g., understanding that letters stand for sounds in words; Storch & Whitehurst, 2002). Both oral language and literacy skills have been linked to children's reading competences (Storch & Whitehurst, 2002).

Language skills are associated with reading competences either directly (Dickinson, Gollinkoff, & Hirsh-Pasek, 2010; Dickinson, McCabe, Peisner-Feinberg, & Poe, 2003; Hammer, Farkas, & Maczuga, 2010; Hindman, Skibbe, Miller, & Zimmerman, 2010), or indirectly, through other precursor abilities, such as phonological awareness (NICHD, Early Childcare Research Network, 2005; Storch & Whitehurst, 2002). Below, two of the key language skills, vocabulary and use of language in discourse, which were used in this study, are discussed.

Vocabulary. One of the major components of language is vocabulary, an important skill that facilitates children's transition to school (Whitehurst & Lonigan, 1998). A larger vocabulary is associated with greater alphabetic knowledge (Hindman et al., 2010), better word reading and spelling skills (Kim, Al Otaiba, Puranik, Folsom, & Grulich, 2014), and improved number naming competences (LeFevre et al., 2010). Moreover, children with richer vocabularies are more likely to have greater self-regulation and fewer internalizing and externalizing behavioral problems (Morgan, Farkas, Hillemeier, & Hammer, 2015). Similar associations between vocabulary and child emergent literacy skills were found in specific groups, such as low-income samples (Hammer et al., 2010; Hindman et al., 2010). For example, Hindman and colleagues (2010) investigated 945 Head Start children's learning trajectories from preschool through first grade and found that vocabulary skills in preschool were related to alphabetic knowledge, name writing, and letter tracing in first grade. Likewise, in the Head Start context involving 3,400 children, Hammer and colleagues (2010) found that preschoolers'

vocabulary skills predicted their reading abilities (reading comprehension, print awareness, and letter recognition) in kindergarten.

Furthermore, vocabulary trajectories from 14 to 46 months of age, predicted children's vocabulary at kindergarten (Rowe, Raudenbush, & Goldin-Meadow, 2012). These findings demonstrated that the faster children acquired vocabulary in their first years of life, the larger their vocabulary was at kindergarten. Most importantly, the relationship between early vocabulary growth and later language skills was stronger for low-SES children than for higher-SES children (Rowe et al, 2012). This may be due to the fact that higher-SES children may have other ways to improve their vocabulary in case they start out behind compared to their low-SES children (Rowe et al., 2012). Therefore, the need for children of low-SES backgrounds to get a jump start in vocabulary is especially important (Rowe et al., 2012).

Use of language in discourse. Another important language skill for children's later academic achievement is their use of language in discourse. An important element required to use language in discourse is the ability to narrate and comprehend a story (Feagans & Farran, 1994). When children narrate a story, they practice their syntactic, grammatical, morphological, and linguistic skills (Vandewalle, Boets, Boons, Ghesquière, & Zink, 2012). They also learn to use decontextualized language (McCabe & Rollins, 1994), which refers to the ability to use language to “convey novel information to audiences who may share only limited background knowledge with the speaker or who may be physically removed from the things or events described” (Whitehurst & Lonigan 1998, p. 851). These narrative skills help children transition from oral language to written text and develop their literacy skills (Gardner-Neblett, Pungello, & Iruka, 2012). For example, using language outside of the immediate context to narrate a story

helps children understand the story, fostering reading comprehension skills (Gardner-Neblett & Iruka, 2015; Schick & Melzi, 2010; Whitehurst & Lonigan, 1998).

Several empirical studies have found links between oral narrative skills and a number of child language and literacy competences (Feagans & Farran., 1994; Gardner-Neblett & Iruka, 2015; Gardner-Neblett & Sideris, 2017; Terry, et al., 2013). For example, in a low-income sample, Terry and colleagues (2013) found that the more complex children's narrative skills were in terms of syntax and vocabulary at the beginning of preschool, the better children's subsequent language skills were at the end of preschool. In another study, utilizing a large nationally representative sample of kindergarten children, Gardner-Neblett and Iruka (2015) found that children's narrative skills had an impact on children's later literacy competencies, particularly for African American boys. The researchers noted that this could be because African-American communities seem to particularly foster the practice of narrating stories. In a more recent study, African American girls' narrative skills in preschool were associated with reading comprehension in the first few grades of elementary school (Gardner-Neblett & Sideris, 2017).

In the present dissertation, the use of language in discourse was measured with a teacher-reported tool, the Adaptive Language Inventory (ALI), which assessed children's narrative and discourse skills necessary for classroom learning (Feagans & Farran, 1978). This tool is an easy-to-administer and cost-effective tool that could potentially be used as a screening measure, assessing children's early narrative skills.

In addition to language skills, literacy competencies are valuable in the reading process (Storch & Whitehurst, 2002; Whitehurst & Lonigan 1998). This dissertation explored two literacy skills: phonological awareness and letter-word identification skills.

Phonological awareness. Often confused with *phonemic awareness*, which refers to the “ability to manipulate and detect the smallest sounds pieces in words, the phonemes,” *phonological awareness* “represents a range of manipulation and detection skills across different sizes of sound pieces” (Phillips Clancy-Menchetti, & Lonigan, 2008, p. 3-4). In other words, phonemic awareness is an important element of phonological awareness (Phillips et al., 2008). Phonological awareness encompasses multiple skills based on the task being performed, such as blending (combining phonemes into words) and segmenting (breaking down a word into its phonemes), or it is based on the part of the word (e.g., phoneme, syllable) on which the task is focused (Anthony & Francis, 2005).

Phonological awareness has also been identified as a precursor of later literacy skills (Phillips et al., 2008; Storch & Whitehurst, 2002). If children cannot identify the phonemes in a word or manipulate sounds in words, they will most likely have difficulties in reading (Anthony & Francis, 2005). Children’s understanding that words are comprised by smaller units (syllables, phonemes) helps them realize that there is a correspondence between a letter, or in some cases more letters, and a sound which facilitates learning to read (Phillips et al., 2008). Empirical studies also have demonstrated the link between phonological awareness and later language and literacy abilities (Storch & Whitehurst, 2002; Lonigan et al., 2013).

Identification of letters and words. In addition to phonological awareness, the ability to identify letters and words is also important for later literacy acquisition. Synthesizing the literature on the topic, Foulon (2005) highlighted the importance of letter naming for reading achievement. For instance, a child needs to know not only the sound of *b* but also how to symbolize it in a written form (Treiman, 2006). Children who cannot identify letters may have

difficulties understanding letter-sound correspondences (Bond & Dykstra, 1967). Letter knowledge has also been associated with spelling abilities (Puranik, Lonigan, & Kim, 2011).

This dissertation investigated children's vocabulary, use of language in discourse, phonological awareness, and letter-word identification skills as measures of child language and literacy skills at multiple time points. More specifically, it examined vocabulary and teacher-reported use of language in discourse at 36 months of child age; vocabulary, teacher-reported use of language in discourse, letter-word identification, and phonological awareness in pre-K; and vocabulary, letter-word identification, and phonological awareness in kindergarten.

Because children enter school with differences in their language and literacy skills, many researchers focus on the home literacy environment and compare children's literacy experiences at home across and within families.

The Home Literacy Environment, Socioeconomic Status, and Ethnicity

Comparative research studies identified fundamental differences in the home literacy environment between low-socioeconomic status (SES) and middle- and/or upper-SES families as well as between minority and White families (Washington, 2001), linking, in this way, socioeconomic status and ethnicity to home literacy environment. These studies claimed that low-SES households exhibited fewer print materials (Hart & Risley, 1995) and less frequent parent-child literacy practices compared to higher-SES households (Boyce et al., 2004; Scarborough & Dobrich, 1994; Yarosz & Barnett, 2001). Less frequent shared book reading seemed also to take place with children of color than with their White peers (Bradley et al., 2001; Raikes et al., 2006). Yet, many of these comparisons focused on what low-income families don't have or don't do compared to their middle-income counterparts rather than focusing on their strengths (Jarrett et al., 2015).

On the other hand, many research studies acknowledged the substantial variation in home literacy experiences even within low-income and minority families, emphasizing that many home literacy practices do take place in low-income families at different frequencies (Bracken & Fischel, 2008; Farver et al, 2006; Hammer, Nimmo, Cohen, Drahein, & Johnson, 2005; Payne, Whitehurst, & Angell, 1994; Phillips & Lonigan, 2009; Rodriguez et al., 2009). For instance, in a low-income sample, comprised predominantly by African American children, Wasik and Hindman (2010) found that some families engaged in reading, talking, and playing with their children more frequently (daily or a few times a week) than other families. Shared book reading was also an important activity in another low-income African American sample (Hammer et al., 2005). Mothers in this sample reported that they viewed shared book reading as a way to bond with their preschool children, and they described several reading styles they implemented (Hammer et al., 2005).

Shared book reading may not be a common practice in all families. For example, in some cultural groups, oral storytelling may be especially prevalent (Casper, 2009; Heath, 1983; Reese, 2012; Vernon-Feagans, 1996). Oral storytelling refers to a range of oral narratives, such as family stories, folklores, jokes, horror stories, and historical anecdotes related to one's cultural history. This activity is perceived as a highly social activity and as an opportunity to entertain, share cultural values, promote family and cultural identity, and reinforce family bond (Reese, 2012). Sometimes a storytelling activity may serve even the role of a bedtime routine, preparing children to sleep (Casper, 2009).

With respect to exposure to print, Purcell-Gates (1996) found that within 20 low-income families, some of them embedded print into their daily activities, such as writing grocery shopping lists and reading flyers, TV guides, and cereal boxes, whereas other families seemed

too busy to interact with print. Heath (1983) observed that in an African American low-income community, adults made a plethora of print materials (newspapers, church materials) available to children but did not provide those materials directly to their children.

Lastly, families may engage in academically-focused activities aiming to teach letters and words (Phillips & Lonigan, 2009). For instance, in a recent qualitative study, Jarrett and colleagues (2015) asked 20 low-income African-American families to describe the activities they implemented at home to prepare their preschool children for kindergarten. Besides engaging in shared book reading, most participants indicated that they got involved in academically-focused practices, such as teaching letters, helping children recognize letters and words, introducing new vocabulary, helping children learn spelling, and promoting letter and name writing. One mother noted: “To be sure Darryl was ready for kindergarten, we made sure he knew his alphabet” (Jarrett et al., 2015, p. 87). Holloway and colleagues (1995), in one of their case studies, found that one African American mother preferred to incorporate letter and number learning activities in daily routines as opposed to directly teaching letters and numbers. For instance, in order to introduce numeracy to her children, she was helping them count the stairs, or showing the amount of money on a bill (Holloway, Rambaud, Fuller, & Eggers-Pierola 1995).

Variations in cognitively-stimulating practices in the home have also been observed in families at different time points. To further illustrate the SES-related differences in the home literacy environment, Kalil and colleagues (2016) drew data from four large national studies, spanning over a period of 24 years, and compared the trajectories of home literacy experiences between low- and high-SES families over time. They found an increase in the SES-gap in specific literacy activities, such as reading books and teaching letters. Higher-SES families engaged in these activities more frequently than lower-SES families. This may be due to family

demographics (e.g., high-SES children are more likely to grow up in married-type families than children in low-SES households; Kalil, Ziol-Guest, Ryan, & Markowitz, 2016).

On the other hand, they found a decrease in the SES-related gaps in book ownership and library attendance (Kalil et al., 2016). Low-SES families exhibited a higher number of books owned at home and more frequent library visits in more recent years than what was demonstrated in previous years. The authors speculated that higher-quality childcare, such as Head Start, which mandates home literacy practices, may have been more accessible to low-income families in more recent years. Another explanation could be that libraries may have started providing more outreach programs (Kalil et al., 2016). Although these findings present good news, they raise the question of whether such resources (Head Start, libraries) are available and accessible to all low-income families, especially to those who live in low-income rural regions where such resources may be more limited.

Overall, these studies show that families engage in home literacy practices in a variety of ways, with different types of practices employed at different frequencies within low-income and minority samples. Therefore, a comparison of home literacy environments and child developmental outcomes relying exclusively on income or race seems unfair and incomplete. Weisner (2002), in particular, highlighted the impact of family ecologies in shaping family routines and activities. Family ecologies may include demographic characteristics, health conditions, safety issues, parental work schedules, and resources available in the community (Weisner, 2002; Holloway & Kunesh, 2015). As such, a number of factors, such as immigration status, English language ability, maternal reading competences, maternal education, family risk factors, residential context, and time availability may affect parents' ability to provide literacy resources and opportunities in the home (Farver et al., 2013).

To further illustrate this complexity, Phillips and Lonigan (2009) analyzed the variation of home literacy practices by conducting a cluster analysis in a large sample of two- to five-year-old children and their primary caregivers. They found variations in the frequency of shared book reading and teaching-oriented activities among this group of parents based not only on family socioeconomic status but also on caregiver stress and caregiver literacy ability, concluding that the associations between socioeconomic status and home literacy practices are complex and nonlinear (Phillips & Lonigan, 2009).

Understanding how home literacy practices are being used by specific families could have important implications for early childhood educators interested in promoting literacy practices at home (Wasik & Hindman, 2010). Beyond acknowledging the variation of home literacy practices within specific groups and across time, researchers focused on understanding how home literacy practices influence child language and literacy skills in specific groups and contexts. A review of the literature discussing the role of home literacy practices in child language and literacy skills follows.

Home Literacy Practices and Children's Language and Literacy Skills

Research has documented that individual practices or constellations of home literacy practices and other aspects of the home literacy environment (e.g., number of books at home, age of children when first being read to) influence child language and literacy development (Baker, 2014; Baroody & Diamond, 2012; Bracken & Fischel, 2008; Foster et al., 2005; Hood, Conlon, & Andrews, 2008; Kim, Im, & Kwon, 2015; Mendive, Lissi, Bakeman, & Reyes, 2016; Weigel, Martin, & Bennett, 2010). In the present study, the frequency of three types of home literacy practices were examined: (a) child literacy practices, (b) parent literacy practices, and (c) parent-child literacy practices.

The reason that these three types of home literacy practices were chosen to be examined over an aggregate home literacy environment composite was because I was interested in understanding how *each* type of home literacy practices, rather than the whole literacy environment, is related to child language and literacy skills. An aggregate home literacy practices composite would give generic information on how the overall home literacy environment plays a role in child language and literacy development. Although this is an important research topic, I was more interested in identifying how specific aspects of the home literacy environment, the three types of home literacy practices, are related to child language and literacy skills. Each one of these types, in relation to child language and literacy skills, are discussed in the following sections of this literature review.

Child literacy practices. One way parents can support child language and literacy skills is by enriching their homes with a plethora of literacy materials, such as books, magazines, educational toys and games, and writing materials. The availability of literacy materials at home provides opportunities for adult-child interactions that foster child language and literacy competencies (Farver et al., 2013). Empirical studies have linked the provision of home literacy materials (e.g., the number of books at home) to children's current and later language and literacy skills (Johnson, Martin, Brooks-Gunn, & Petrill, 2008; Payne et al., 1994; Rodriguez et al., 2009).

Other studies have focused on the frequency with which children actually engage with literacy materials at home. The extent to which children engage in these materials may depend partly on how much children are interested in these materials. One way to measure child literacy interest is by examining the frequency with which children engage in literacy practices on their own (Baroody & Diamod, 2012; Baroody & Diamond, 2016). Children who are interested in

literacy practices may create or seek out more opportunities to engage in literacy activities and thus practice their language and literacy skills (Baroody & Diamond, 2016). Beyond playing with literacy materials by themselves, children may ask their parents to read to them more frequently (Baroody & Diamond, 2016; Farver et al., 2006).

Other ways to examine child literacy interest focus on children's enjoyment of participating in literacy activities. These studies utilized child-reported measures or observations of children's engagement during a literacy activity (Baroody & Diamond, 2012; Deckner, Adamson, & Bakeman, 2006; Frijters, Barron, & Brunello, 2000; Malin, Cabrera, & Rowe, 2014; Roberts, Jurgens, & Burchinal, 2005). Children's enjoyment in a literacy activity often encourages adults to continue implementing the literacy activity or to promote more literacy practices (Baroody & Diamond, 2016). Child literacy interest, measured by children's enjoyment in engaging in literacy practices was found to be significantly related to children's language and literacy skills (Frijters et al., 2000; Baroody & Diamond, 2016).

Because the focus of this study is on one indicator of child literacy interest—the frequency with which children participate in literacy activities on their own—the following review of the literature will concentrate on this indicator.

Links between child literacy practices and child language and literacy skills. Several research studies found positive associations between the frequency with which children participated in literacy activities on their own and children's language and literacy skills (Farver et al., 2006; Johnson et al., 2008; Payne et al., 1994). For example, in a retrospective study of families living in a metropolitan area, parents of four-year-old children were asked to report their children's toy preferences from birth to four years of child age (Thomas, 1984). Parents' reports suggested that children who were good early readers in pre-K tended to play more with literacy-

related toys, such as alphabet cards and books from birth up to pre-K age; conversely, children who were non-readers at pre-K preferred more gross motor and construction toys (Thomas, 1984). Parents in this sample had an average educational background of 16 years. Similarly, children who amused themselves alone with books frequently (almost daily) at 36, 42, and 46 months of age were better readers at second grade than children who engaged in book reading activities less frequently (two-three times a week) in an urban, middle-income sample (Scarborough et al., 1991). The frequency with which children amused themselves with books was significantly associated with their concurrent expressive vocabulary skills and reading competencies, including phonological awareness and a composite of letter identification, word identification, and nonsense word decoding skills in another socioeconomically diverse sample of kindergarten and first grade children living in several metropolitan areas (Johnson et al., 2008).

The frequency with which children engaged in a combination of literacy practices on their own, not just isolated activities, was also significantly related to child language and literacy skills (Farver et al., 2006). For example, in a sample of low-income Latino families living in an urban area, the frequency with which children asked to be read to, asked to look at books by themselves, asked what printed words say, attempted to write words, and played with alphabet games in pre-K was positively associated with children's concurrent vocabulary skills (Farver et al., 2006). In a more recent study, teachers were asked to answer six questions related to the frequency with which children participated in literacy practices on their own in the classroom (e.g., how often they attempt to write words) as well as questions related to children's level of enjoyment in such activities (e.g., how much does the child enjoy looking at books; Baroody & Diamond, 2016). The teacher-reported child literacy interest was associated with child

vocabulary, letter identification and phonological awareness in a low-income ethnically diverse sample of 4-5 year old children drawn from both rural and urban areas in the Midwest (Baroody & Diamond, 2016). Similarly, the frequency with which children looked at books by themselves in combination with the frequency with which they asked to be read to and the level of enjoyment they displayed during a literacy activity was also associated with letter knowledge skills in a low-income urban preschool sample (Bracken & Fischel, 2008).

Non-significant associations. One previous study, however, failed to find an association between child literacy practices and child vocabulary skills (Bracken & Fischel, 2008). Bracken and Fischel (2008) explained that this inconsistency with previous studies may be due to the presence of parent-child literacy practices in the same regression model. Although bivariate correlations showed a significant relationship between child literacy interest and child vocabulary skills, in the regression analysis, which included parent-child literacy practices, child literacy interest was not significantly related to child vocabulary skills (Bracken & Fischel, 2008). Future studies should try to uncover whether there is a similar inconsistency in other samples.

In sum, most studies that focused on adult reports of the frequency with which children engage in literacy activities on their own or the frequency with which children ask to participate in literacy activities found associations with vocabulary skills (Baroody & Diamond, 2016; Johnson et al., 2008; Farver et al., 2006), letter-word identification (Baroody & Diamond, 2016; Bracken & Fischel, 2008), and phonological awareness (Baroody & Diamond, 2016; Johnson et al., 2008) concurrently.

Therefore, there is evidence that for these kinds of interactions between children and literacy materials, the frequency with which children engage in their own literacy practices may

be a more meaningful measure than just the availability of home literacy materials. Most of the above studies, however, used vocabulary as a measure of child language skills. Extending these findings by including additional language skills, such as the use of language in discourse, is needed. Moreover, these studies concentrated on urban samples or nationally representative samples without a clear focus on rural areas. The study by Baroody and Diamond (2016) used both urban and rural children, but the findings were not discussed separately based on their area of residence. Therefore, studies examining the role of child literacy practices in their language and literacy development in rural areas may provide us with unique information.

Parent literacy practices. Another way parents may contribute to children's emergent literacy development is by modeling or engaging in literacy practices on their own (Baroody & Diamond, 2012). For example, parents who read for pleasure or engage in other literacy practices on their own when children are present convey the message that literacy is a normal everyday activity (Burgess, Hecht, & Lonigan, 2002). A common belief is that literate parents are more likely to provide literacy opportunities in their homes than less literate parents (Philips & Lonigan, 2005). It is plausible that parent literacy practices are related to child outcomes because in an environment where literacy is valued, children may have more opportunities and become more interested in engaging with their own literacy practices and/or with their parents. Empirical studies have shown that parents who enjoy engaging in literacy practices on their own tend to promote more parent-child literacy practices (Scarborough & Dobrich, 1994; Brown et al., 2013). For example, utilizing a middle-income preschool sample in an urban area in Australia, Brown and colleagues (2013) found that parents who read more frequently for pleasure, read to their children more frequently as well.

In addition to modeling literacy behaviors, and providing more literacy opportunities directly or indirectly, avid readers usually have a more advanced vocabulary and use a more syntactically complex language than adults who do not often read (Symons et al., 1996; Van Steensel, 2006). Consequently, when parents interact with their children around a literacy practice, they may expose their children to such language qualities, which may explain children's advanced language and literacy skills (van Steensel, 2006).

Links between parent literacy practices and child language and literacy skills. Few studies have examined empirically the direct associations between the frequency with which parents engage in their own literacy practices and children's language and literacy skills (Davidse, de Jong, Bus, Huijbregts, & Swaab, 2011; van Steensel, 2006). Some of them have found significant associations. For example, in a study utilizing an urban ethnically and socioeconomically diverse sample in the Netherlands, parents (and older siblings) who engaged in personal reading and writing activities (e.g., reading books, reading magazines, writing letters and postcards) more frequently had children with higher concurrent vocabulary scores in first grade than parents who engaged in such activities less frequently (van Steensel, 2006). Similarly, in another study, taking place again in the Netherlands, parents' reading for pleasure, measured by their familiarity of adult books, was positively associated with children's vocabulary and letter knowledge skills in a low- to middle-income sample of native Dutch children with a mean age of 54 months (Davidse et al., 2011). In a Canadian urban sample, parents' familiarity with adult books was associated with 4-year old children's syntax comprehension, indicating that children were able to understand grammatically complex sentences (Sénéchal et al., 2008). The majority of parents (85%) from this sample had attended postsecondary education, which is higher than the national average in Canada (Sénéchal et al.,

2008). In another study involving children with reading disorders, parent literacy practices were positively associated with child literacy competences, such as spelling, controlling for child IQ and maternal education (Rashid, Morris, & Sevcik, 2005).

Non-significant associations. Not all studies, however, found links between parent literacy practices and children's language and literacy skills. Bracken and Fischel (2008) failed to find significant associations between parents' literacy interest, measured by their daily duration of reading for pleasure and their enjoyment of reading, on one hand, and children's concurrent vocabulary skills, letter-word identification, letter knowledge, and print concepts, on the other, in an urban ethnically-diverse low-income pre-K sample. Likewise, Baroody and Diamond (2012) failed to find an association between parent literacy practices and children's literacy skills, specifically letter-word identification and alphabet knowledge in an urban ethnically-diverse low-income sample of 4-5 year old children. Their composite of parent literacy practices included a range of book-reading-related items, such as number of times per week parents read, number of minutes per day parents read (not including reading to the child), number of grown-up books in the home, extent to which parents enjoyed reading, likelihood that parents would read, frequency of parental reading, and frequency of children seeing their parents read (Baroody & Diamond, 2012).

In sum, studies that investigated the associations between parent literacy practices and child language and literacy skills varied on their sample's socioeconomic status, ethnic background, and child age. For instance, van Steensel (2006) and Davidse and colleagues (2011) found significant associations between parent literacy practices and child vocabulary skills in socioeconomically-diverse and low-middle income samples respectively whereas Bracken and Fischel (2008) failed to find such associations in a low-income sample. Because of the limited

number of studies examining these associations and the variations of samples and measures among diverse studies, conclusions are difficult to draw. Future studies could further our understanding of the role of parent literacy practices in child language and literacy skills in specific groups. In addition, because the majority of studies examining parent literacy practices focused on families living in urban areas, research studies would benefit from investigating parent literacy practices in families living in high-poverty rural communities.

Parent-child literacy practices. Parents can engage in numerous literacy activities with their children. They can read books to them, tell stories, sing songs, play rhyming games, teach letters and words, and visit the library. A large body of research investigated parent-child literacy practices in relation to child language and literacy skills (e.g., Raikes et al., 2006). Despite the abundant information on the topic, several challenges impeded the synthesis of this review and the identification of common themes.

One of the challenges was that the conceptualization of parent-child literacy practices differed across many studies. Some of them focused on individual parent-child literacy practices, such as shared book reading (Raikes et al., 2006). Others combined a number of parent-child literacy practices into one construct (Bracken & Fischel, 2008). Some of them distinguished literacy practices between instructional activities and activities aiming to amuse, measuring them as two separate factors (Sénéchal & LeFevre, 2002). Others combined a wider range of activities all at once (Kim et al., 2015). Second, many studies measured specific language and literacy skills as child outcomes (Baker, 2014; Foster et al., 2005); others, on the other hand, combined both language and literacy skills in one variable. Taking into account these challenges, the literature review of the topic is organized in the following way: first, studies focusing on individual parent-child literacy practices in relation to child language and literacy

skills are discussed. Then, a review of studies utilizing a broader conceptualization of parent-child literacy practices, combining multiple practices at once is presented. Within this section, first, studies are described that measured child school readiness combining both language and literacy skills at once, followed by studies focusing on child language and literacy skills as two separate factors.

Individual parent-child literacy practices and child language and literacy skills.

Individual parent-child literacy practices have been associated with child language and literacy outcomes. A quintessential parent-child literacy practice, shared book reading, has received considerable research attention (Luo, Tamis-LeMonda, Kuchirko, Ng, & Liang, 2014; Piasta, Justice, McGindy, & Kaderavek, 2012; Raikes et al., 2006). During shared book reading, parents have the opportunity to converse with their children beyond the content of the book, and introduce, in this way, new vocabulary (Dickinson & Snow, 1987). Studies have demonstrated that children are exposed to more novel vocabulary and grammatically complex language during a shared book activity than during their play, routines, and daily interactions with adults (Evans & Shaw, 2008; Sénéchal, 2008). The diversity and the complexity of the language parents use during a shared book reading activity has been linked to child language outcomes (Hart & Risley, 1995; Panscofar et al., 2010).

Parent-child book reading has been associated with child language skills, such as vocabulary (Hood et al., 2008; Sénéchal & LeFevre, 2002; Wasik & Bond, 2001) and narrative skills (Cristofaro & Tamis LeMonda, 2012; Luo et al., 2014). Some studies also found that shared book reading, especially when adults make print references, influences children's literacy skills, such as reading, spelling, and comprehension competencies (Piasta, et al., 2012). Another reading-related practice, visiting libraries, has also been linked to children's language skills

(Payne et al., 1995), probably because libraries expose children to a variety of books and educational events (Wasik & Hindman, 2010).

A growing body of research has begun to examine oral storytelling (e.g., Gardner-Neblett & Iruka, 2015). Several researchers identified narrative skills as a strength in specific cultural groups, such as African American and Latino children (Casper, 2009; Gardner-Neblett & Iruka, 2015; Vernon-Feagans, 1996). For instance, Vernon-Feagans (1996), analyzing children's talk in poor African American and White communities in semi-rural North Carolina, described that low-income African-American children were able to use complex language, especially when teasing their siblings or engaging in imaginative storytelling, but this did not translate to better performance at school.

Few studies, examined the association between the practice of oral storytelling and academic achievement. Most studies focused on the impact of children's narrative skills, which can be developed during an oral storytelling activity, on children's literacy competences (Currenton, Craig, & Flanigan, 2008). During an oral storytelling activity, such as conversations about past events, children practice their narrating and discourse skills as well as listen to decontextualized speech, which improves story comprehensions abilities (Currenton et al., 2008). Children's narrative skills have been associated with their later literacy competencies (Gardner-Neblett & Iruka, 2015; Terry et al., 2013). For example, in a study utilizing a White middle-income sample, Reese (1995) found that mother-child conversations during shared past events narratives when children were 40, 46, and 58 months old was a strong predictor of children's print concepts, story comprehension, and vocabulary at 70 months of age. In fact, conversations about past events was a stronger predictor than shared book reading for these skills probably

because of the increased use of decontextualized talk during mother-child discussions about past events (Reese, 1995).

Beyond looking at book reading and oral storytelling, many parents engage in teaching-oriented literacy practices with their children, aiming to teach letters and words (Jarret et al., 2015). For example, parents may point at letters while reading a book, or use flashcards and magnetic letters (Moreno, 2002; Wasik & Hindman, 2010). This type of instructional activities have been associated mostly with literacy skills, including child alphabet and phonological awareness (Martini & Sénéchal, 2012; Sénéchal, 2008). Lastly, singing songs and playing rhyming games have been found to improve phonological awareness skills (Foy & Mann, 2003).

There is no doubt that individual parent-child literacy practices support child language and literacy skills; yet, researchers observed weak associations between specific individual literacy practices, particularly shared book reading and children's skills (Scarborough & Dobrich, 1994). In their literature review, Scarborough and Dobrich (1994) found that the association between reading to preschool children and their later academic outcomes accounted only for about 8% of the total variance in achievement, suggesting that other variables may play a role as well. This means that book reading is only one aspect of the home literacy environment that influences child language and literacy outcomes, and suggests that other aspects should be taken into consideration (Burgess et al., 2002; Whitehurst & Lonigan, 1998). Burgess and colleagues (2002) specifically proposed that the home literacy environment should be viewed as "complex and multifaceted," combining a number of literacy experiences at once (Burgess et al., 2002, p. 411). Thus, further research examining how the home literacy environment, combining a number of dimensions, influences child emergent literacy skills is imperative.

Following this recommendation, the current study combines multiple literacy practices, including shared-book reading, oral storytelling, singing songs, playing rhyming games, and teaching letters in one construct.

Links between parent-child literacy practices and child language and literacy skills combined together. Conceptualizing parent-child literacy practices as multifaceted structures, several studies have found significant associations between home literacy practices and child language and literacy skills (Baker, 2014; Foster et al., 2005). For example, Baker (2014) found that a combination of parent-child literacy practices at 24 months of age predicted a combination of children's early language and literacy skills at preschool in a nationally representative sample, comprised by preschool Mexican-American children at or above the poverty threshold. The parent-child literacy practices measure encompassed the frequency of parent-child reading, singing songs, telling stories, and visiting libraries, as well as the provision of reading materials at home. The outcome variable, in this study, was also measured as one factor consisting of both language and literacy skills, including English language, phonological awareness, letter-word sound knowledge, print awareness, word identification, and receptive/expressive vocabulary competencies.

In another study, Foster and colleagues (2005) combined a variety of aspects of the home literacy environment, including reading activities (e.g., frequency of shared book reading), enrichment activities (e.g., trips to library, zoos, sporting events), home learning activities (e.g., teaching a song, playing a game), and the provision of books and print materials to create a latent variable. This latent variable predicted child emergent literacy skills, including vocabulary, phonological awareness, and children's literacy interest, all combined into a latent construct (Foster et al., 2005). The sample consisted of 4- and 5-year old ($M = 59$ months) predominantly

African American children drawn from Head Start programs located in both rural and urban areas. Although this study included rural children, findings were not discussed based on the area of residence.

These studies used a broad concept of parent-child literacy practices as well as a broad concept of child ability, including multiple language and literacy skills in one composite or factor. Beyond understanding the role of parent-child literacy practices on children's language and literacy skills combined together, it would also be important to clarify whether parent-child literacy practices are associated with specific language and/or literacy abilities. Prior research has emphasized the need to identify whether specific language and/or literacy skills arise from the same array of literacy practices (Whitehurst & Lonigan, 1998). Besides, home literacy practices have often been differentially linked to language and literacy skills (Kim et al., 2015). For instance, in their literature review, Scarborough and Dobrich (1995) supposed that shared book reading is related to at least language abilities and suggested that its association with literacy skills might be indirect. Furthermore, researchers claimed that language and literacy skills are differentially linked to reading competencies at different stages in the reading acquisition process (Whitehurst & Lonigan, 1998). According to this perspective, language skills seem to be more important earlier in the reading acquisition process when, for example, children start developing pre-literacy skills, but literacy competencies may be more important at a later time point in the process, perhaps when children are able to read more fluently (Whitehurst & Lonigan, 1998). Therefore, literacy practices may have a differential effect on language and literacy skills at different time points.

For example, in their review, Bus and colleagues (1995) discussed that as children become more conventional readers, the effects of shared book reading on child language and

literacy skills weaken. Thus, it would be crucial to understand whether the same array of home literacy practices at age of three influence individual language and/or literacy skills at different developmental stages (at 36 months, pre-K, and/or Kindergarten).

Links between parent-child literacy practices and child individual language and literacy skills. With respect to the role of parent-child literacy practices on child language and literacy skills measured separately, most findings have been consistent. The majority of studies, using either socioeconomically diverse or low-income samples, ethnically diverse or more ethnically homogeneous populations, indicated that parent-child literacy practices are positively associated with child language and literacy skills at least concurrently (Bracken & Fischel, 2008; Farver et al., 2006; Mendive et al., 2016; Meng, 2015). For example, using a large nationally representative sample of ethnically diverse children, Meng (2015) found positive concurrent associations between parent-child literacy practices, including reading and teaching activities and child receptive vocabulary at entry to preschool. In an urban socioeconomically diverse sample in Canada, Evans and colleagues (2000) found that teaching-oriented parent-child literacy practices were associated with child letter knowledge, sound knowledge, and phonological sensitivity skills concurrently in kindergarten.

Similarly, in another urban socioeconomically diverse sample in Australia, comprised by mostly Caucasian children, Hood and colleagues (2008) found that parent-child literacy practices, including teaching children to read, to name letters, and to write, all combined into one category, predicted children's letter-word identification concurrently in preschool.

Not only in diverse but in more socioeconomically and/or ethnically homogeneous groups, the associations between parent-child literacy practices and children's language and literacy skills have been positive. For instance, in an urban sample consisting of low-income

ethnically-diverse preschool children, Bracken and Fischel (2008) found that a combination of parent-child literacy practices was associated with children's concurrent receptive vocabulary as well as with print and story concepts. Their composite of parent-child literacy practices was comprised of frequency of shared book reading, child's age at which parents started reading to their child, duration of shared book reading interactions, number of books at home, and frequency of library visits. Similarly, in another urban low-income pre-k sample residing in Chile, Mendive and colleagues (2016) found that shared book reading in combination with the number of child and adult books at home was associated with concurrent vocabulary at preschool. Helping children to read and write letters and numbers was related to child letter-word identification and dictation skills in the same sample (Mendive et al., 2016).

Broader measures capturing a wider range of parent-child literacy practices in socioeconomically and/or ethnically similar groups were also positively related to child language and literacy skills (Farver et al., 2006). For example, in an urban low-income sample of preschool Latino children, Farver and colleagues (2006) found that their parent-child literacy practices measure was associated with children's concurrent receptive vocabulary. Their measure captured a broader range of literacy practices, including the frequency of shared book reading, visits to library, teaching letters, playing rhyming games, pointing words, and telling what the words say. Similarly, in an urban middle-income preschool sample, Weigel and colleagues (2010) found that a broader measure of parent-child literacy practices predicted children's print awareness in preschool. The parent-child literacy practices measure was a composite, combining the frequency of a series of practices, including shared book reading, visiting library, engaging in reciting rhymes, telling stories, drawing pictures, playing games, and viewing educational TV

programs; as well as number of minutes children were read to the previous day; number of picture books at home; and age of children when parents started reading to their child.

In addition to concurrent relations, longitudinal associations between parent-child literacy practices and children's language and literacy skills have also been documented (Kim et al., 2015). In a large nationally-representative, ethnically-, and socioeconomically-diverse sample, Kim and colleagues (2015) found that parent-child literacy practices when children were two years old, predicted their language skills, receptive and expressive vocabulary combined together, as well as a composite of literacy skills two years later at preschool, controlling for socioeconomic status. The composite of literacy skills included phonological awareness, letter sound knowledge, letter recognition, print conventions, and word recognition (Kim et al, 2015). The parent-child literacy practices measure combined the frequency of a variety of parent-child literacy practices, including shared book reading, singing songs, and telling stories, as well as the number of books at home (Kim et al., 2015). The researchers made the case that the same array of parent-child literacy practices predicted both language and literacy skills longitudinally.

In another socioeconomically diverse study, focused mostly on Caucasian children, residing in an urban area, Hood and colleagues (2008) found that parent-child literacy practices, including frequency of shared book reading, the number of children's books at home and a score of a book-title recognition test, in which preschool children had to identify the titles of children's books, predicted child vocabulary skills in first grade. Similarly, in their middle-income preschool sample, Weigel and colleagues (2010) found that parent-child literacy practices in preschool predicted children's print knowledge and writing ability a year later.

Examining the trajectories of home literacy environments during the first five years of children's lives, Rodriquez and colleagues (2011) explored whether earlier or later home literacy

experiences predicted children's language and literacy skills. The home literacy environment composite included the frequency of adult-child literacy practices (e.g., shared book reading, oral storytelling, singing songs), the quality of maternal engagement, and the provision of home literacy materials. The researchers calculated the overall score of early learning environments, at 15, 25, and 37 months as well as the overall score of later learning environments measured at 60 months to pre-K. Regression analyses indicated that only the early home literacy environment was associated with higher vocabulary skills in pre-K; the later home literacy environment was not a significant predictor of these skills. In contrast, both early and later home literacy environments were significant predictors of pre-K literacy skills (Rodriquez et al., 2011). The researchers, in this way, discussed the timing in developing specific language skills and highlighted the importance of early home literacy experiences from 15 to 37 months on child pre-k vocabulary skills (Rodriquez et al., 2011).

Non-significant associations. Despite the fact that the majority of studies revealed positive associations between parent-child literacy practices and children's language and literacy skills concurrently and longitudinally, some studies failed to corroborate such findings (Baroody & Diamond, 2012; Bracken & Fischel, 2008). For instance, utilizing a low-income and ethnically-diverse preschool sample, Baroody and Diamond (2012) were not able to find an association between their composite of parent-child literacy practices and children's concurrent receptive vocabulary skills, alphabet knowledge, and letter-word identification. The researchers speculated that their non-significant findings may be related to the different items used in the parent-child literacy measures or the different scale of measurement used in diverse studies (Baroody & Diamond, 2012). Comparing their measure to the one used in Farver and colleagues (2006), Baroody and Diamond (2012) claimed that their measure was narrower, including items

mostly related to book interactions, such as the number of times per week parents read to their child, number of minutes per day parents read to their child, number of children's books in the home, frequency of trips to the library, and age of child when shared reading began (Baroody & Diamond, 2012). On the other hand, Farver and colleagues (2006) used a measure that included, in addition to shared book reading, the frequency of other activities, such as teaching letters and words, singing songs, and playing rhyming games. Alternatively, Baroody and Diamond (2012) discussed that their small sample size ($n = 81$) may have not allowed them to detect significant results.

Similar non-significant findings were revealed in another study utilizing an urban low-income sample (Bracken & Fischel, 2008). Bracken and Fischel (2008) failed to find a significant association between parent-child literacy practices and child letter knowledge concurrently at preschool. The researchers noted that their parent-child literacy practices measure did not include practices focusing on teaching letters, rhyming, or joint writing (Bracken & Fischel, 2008), which may have been the reason for these non-significant results.

Because most of the above studies used child vocabulary skills as an outcome, more research studies are needed to further our understanding of how additional language competences are influenced by parent-child literacy practices. The present study will utilize language use in discourse as an additional language outcome, along with child vocabulary skills.

In sum, parent-child literacy practices have been associated with child language outcomes, particularly with vocabulary skills in low-income and socioeconomically diverse samples. Concurrent associations in preschool (Bracken & Fischel, 2008; Farver et al., 2006; Meng, 2015) and longitudinal associations from toddlerhood to preschool (Kim et al., 2015; Rodriguez et al., 2011) or preschool to first grade (Hood et al., 2008) have also been

documented. Associations between parent-child literacy practices and child literacy skills are less clear in groups of children before they enter school as some studies failed to find associations between parent-child literacy practices and child literacy outcomes (Bracken & Fischel, 2008; Baroody et al., 2012). Furthermore, drawing conclusions is difficult because different studies measured different child literacy skills. Some studies used letter-word identification (Hood et al., 2008; Rodriquez et al., 2011), others used print awareness (Weigel et al., 2010), and others used composites of multiple literacy skills combined together (Bracken & Fischel, 2008). Therefore, future studies to enhance our understanding of the relationship between parent-child literacy practices and child literacy skills would be worthwhile.

Overall, taking into account the three types of home literacy practices, child, parent, and parent-child literacy practices, based on the studies cited above, associations between home literacy practices and child language skills appear more consistent than associations with literacy skills. Most researchers agree that child literacy practices, parent literacy practices, and parent-child literacy practices are positively associated with child language skills, especially with vocabulary (e.g., Farver et al., 2006; Kim et al., 2015). In contrast, a comparison among studies on the associations between home literacy practices and child literacy skills is more problematic because diverse studies used different measures of literacy skills and samples of different socioeconomic and ethnic background, as well as different child age (Baroody & Diamond, 2012).

In addition, most of the studies reviewed in this dissertation, predicting for language and literacy skills, used ethnically diverse samples and only a few included a considerable percentage of African American families (Rodriquez et al., 2011). Furthermore, the majority of studies utilized urban samples. Understanding the impact of parent-child literacy practices on child

language and literacy skills in groups of children living in rural areas comprised by a considerable number of both African American and non-African American children would offer additional information on the topic.

The Rural Context

According to the bioecological theory (Bronfenbrenner & Morris, 2006), the context (home, poverty, rural communities) in which children live and interact with others and with their environment matters in understanding child development. Yet, home literacy practices have been examined mostly in urban and suburban areas, not in rural regions. Therefore, examining home literacy practices in rural areas of high poverty will extend previous findings and further our understanding of how these practices influence child language and literacy development.

Comparative studies found disparities in school readiness skills between children living in rural areas and children residing in non-rural areas (Grace et al., 2006; Miller & Votruba-Drzal, 2013). Utilizing a large, nationally representative sample, Miller and Votruba-Drzal (2013) found that children living in large rural areas had lower math and reading competences at kindergarten entry than children living in small urban areas. Grace and colleagues (2006), analyzing baseline data from the Early Childhood Longitudinal Study using birth (ECLS-B) and kindergarten (ECLS-K) cohorts, reported that rural White and rural African American children were approximately 10%-15% less likely to have proficient letter- and sound-identification skills at kindergarten entry than their non-rural White and African American peers respectively.

Differences in the population, resources, economic characteristics, and cultural capital between rural and non-rural areas may result to variation on children's academic skills between these two contexts (Miller & Votruba-Drzal, 2013). For instance, compared to urban and suburban areas, low-income rural regions may be characterized by limited access to resources,

(O'Hare, 2009; Froiland, 2011; Vernon-Feagans et al., 2010). Indeed, in a recent empirical study, Clarke and colleagues (2017) found that preschool children living in rural communities had lower exposure to resources, such as libraries, than urban children. Limited exposure to libraries was negatively associated with rural children's reading scores in kindergarten (Clarke et al., 2017).

In addition, parents in low-income rural regions may often have to work nonstandard hours (Mather & Scopilliti, 2004) and commute long distances (Vernon-Feagans, Cox et al., 2013). Women in particular with less education (high school degree or less) in rural areas may even have fewer working opportunities (e.g., they are more likely to work nonstandard work hours than college-educated women; Vernon-Feagans, Burchinal, & Mokrova, 2015). These factors may impede parents' ability to spend time with their children (Vernon-Feagans, et al., 2015; Vernon-Feagans et al., 2010; Enchautegui, 2013). Parent interactions with their children at this early age may be especially important because, during this time, children develop critical language and literacy skills (Vernon-Feagans et al., 2010).

Most importantly, families in low-income rural areas are more likely to be poorer than urban poor families (O'Hare, 2009). Although rural parents may work more hours, their earnings are lower compared to their urban counterparts (Vernon-Feagans et al., 2010). Poverty has been associated with a number of risk factors, such as lower parental education, single-parenthood, and parental unemployment, which have been linked to lower quality of family interactions, as well as to children's skills in various developmental domains (Vernon-Feagans et al., 2013). On the same note, these challenges may explain how frequently parents are able to practice and provide stimulating literacy activities in the home, and how these practices may or may not be related to children's language and literacy development.

Nonetheless, qualities of living in rural areas may function as protective factors and compensate for the above-mentioned challenges (Clarke et al., 2017). For instance, children in rural areas are more likely to grow up in two-parent households compared to urban children (Vernon-Feagans et al., 2010). In addition, rural families are more likely to own a house (Vernon-Feagans et al., 2010). In their study, Clarke and colleagues (2017) found that despite the limited exposure to libraries, living in rural areas versus urban and suburban did not make a difference on the provision of home literacy materials or on parents' engagement in home literacy practices, such as reading books, singing songs, and telling stories to their children. Furthermore, rural children's kindergarten reading scores did not differ from those of urban children (Clarke et al., 2017). The researchers discussed that other factors, such as access to open space and nature, may alleviate the negative consequences of living in rural areas (Clarke et al., 2017). Thus, the low-income rural context presents a unique landscape to investigate home literacy practices.

Limitations in the Existing Literature

Several limitations have been identified in the literature review. First, a considerable body of research has concentrated on urban/suburban samples or nationally representative samples without a focus on rural areas. The majority of the studies cited above used urban samples (e.g., Bracken & Fischel, 2008; Evans, Shaw, & Bell, 2000; Farver et al., 2006; Johnson et al., 2008; van Steensel, et al., 2006; Weigel et al., 2010) or nationally representative samples without a clear focus on rural areas (e.g., Baker, 2014; Kim et al., 2015; Meng, 2015). Studies that used samples drawn from both urban and rural areas, such as the one by Foster and colleagues (2005) did not discuss the findings based on the area of residence. In the United States, more than one fourth of low-income children live in rural areas (O'Hare, 2009).

Although the importance of home literacy environment on child language and literacy development is well documented, little is known about how home literacy practices shape these domains of child development in rural communities. Previous studies showed that rural parents read less often to their children and that they have fewer reading materials at home (Lee & Burkam, 2002). Therefore, developing new research findings about families living in rural areas is crucial. This dissertation aimed to fill this gap by focusing on a representative sample of families living in rural areas with high-poverty rates.

Second, the majority of research has focused on parent-child literacy practices whereas few studies examined child literacy practices and parent literacy practices. This study examined associations between each of these additional types of home literacy practices, along with parent-child literacy practices, and children's skills. In regards to the parent-child literacy practices, shared book reading has gained the most substantial research attention. Few studies have included other parent-child literacy practices, such as storytelling, singing songs, and teaching letters into one category. This study included several parent-child literacy practices. Coupled with child literacy practices and parent literacy practices, this dissertation followed a more holistic approach of examining home literacy practices in relation to child language and literacy competencies.

Third, the existing literature has mostly targeted home literacy practices provided during preschool and kindergarten years. Evidence, however, showed that the effects of home literacy environment are considerable in younger children during their first 36 months of their life (Burgess, 2011; Burgess et al., 2002; Rodriguez & Tamis LeMonda, 2011). Nevertheless, few research studies have investigated home literacy practices before children enter preschool. This study targeted literacy practices when children were 36 months old.

Fourth, most research studies focused on vocabulary as a measure of child language skills. The present study included an additional language measure: child language use in discourse. With respect to literacy skills, this study included letter-word identification and phonological awareness at different time points.

The above gaps in the existing literature led to formulating the following research question:

Research Question

In a sample of families living in low-income rural areas and controlling for a number of variables, including maternal education, maternal literacy, number of work hours per week; income-to-needs ratio and state of residence; as well as child gender, race, mental ability, and number of hours spent at child care:

1. How does the frequency of three types of home literacy practices (child literacy practices, parent literacy practices, and parent-child literacy practices) at age three relate to children's 3-year, pre-k, and kindergarten language and literacy skills?

Based on bioecological framework and empirical evidence, I hypothesized that child literacy practices and parent-child literacy practices at 36 months of child age would be positively associated with children's language and literacy skills at 36 months, in pre-K, and in kindergarten. In regard to parent literacy practices, I hypothesized that parent literacy practices would be positively associated with child language skills, at least concurrently. With respect to the associations between parent literacy practices and child later language skills, as well as between parent literacy practices and concurrent and longitudinal literacy skills, results have been mixed. For this reason, whether parent literacy practices would be positively associated

with child language longitudinally and literacy skills concurrently and/or longitudinally will be tested as an exploratory hypothesis.

Research Question	Measures	Analyses
How does the frequency of three types of home literacy practices (child literacy practices, parent literacy practices, and parent-child literacy practices) at age three relate to children's 3-year, pre-k, and kindergarten language and literacy skills?	<p>Predictors at 36 months:</p> <ul style="list-style-type: none"> a) Child literacy practices b) Parent literacy practices c) Parent-child literacy practices <p>Outcomes at 36 months:</p> <ul style="list-style-type: none"> a) Expressive vocabulary skills (PLS-4; Zimmerman, Steiner, & Pond, 2002) b) Language use (ALI; Feagans & Farran, 1978) <p>Child outcomes in pre-K:</p> <ul style="list-style-type: none"> a) Vocabulary (PPVT; Dunn & Dunn, 2007) b) Language use (ALI; Feagans & Farran, 1978) c) Letter-word identification (LW; McGrew & Woodcock, 2001) d) Phonological awareness (TOPEL; Lonigan, Wagner, Torgeson, & Rashotte, 2007) <p>Child outcomes in kindergarten:</p> <ul style="list-style-type: none"> a) Vocabulary (PV; Woodcock-Johnson, McGrew & Mather, 2001) b) Letter-word identification (LW; Woodcock-Johnson, McGrew & Mather, 2001) c) Phonological Awareness (TOPEL; Lonigan, Wagner, Torgeson, & Rashotte, 2007) 	Regression analyses predicting to each child outcome, controlling for background characteristics were employed. Overall, nine regressions were conducted.

CHAPTER THREE

Methods

Participants

Data for this study were drawn from a longitudinal study, the Family Life Project (FLP), which was designed to explore the lives of families in high poverty rural areas in the U.S. Using a developmental epidemiological design, FLP created a representative rural sample of every baby born to a mother who resided in one of six rural high-poverty counties in two states, North Carolina and Pennsylvania, over a one-year period (Vernon-Feagans et al., 2013). The complete sample consisted of 1,292 participants. To define rural counties, Beale codes 3, 4, and 6 were used; rural counties were counties that contained mid-size towns and were far away from urban centers (Butler & Beale, 1994). Three rural counties in North Carolina and three in Pennsylvania were selected. The study oversampled for African American families in North Carolina and for low-income families in both states in order to ensure adequate representation of African American and low-income families in both regions (for details on the recruitment strategy, see Vernon-Feagans, Cox, et al., 2013). The sample used in the current study was comprised of families who responded to the items of home literacy practices when their child was 36 months old ($n = 1,117$). Participants who did not complete family literacy practices questionnaires and therefore were excluded from analyses were not significantly different on any of the covariates except child gender (male, $\chi^2 = 5.19, p = .02$). It appeared that the difference between boys and girls was smaller in the current sample than the difference between boys and

girls in the excluded sample. Significantly fewer boys remained in the study than those who did not, compared to the girls.

Procedures

Data for this study were collected through home visits at 2, 6, 15, 24, and 36 months. Each home visit lasted approximately 2-3 hours and involved a variety of measures, including questionnaires (e.g., background characteristics, maternal literacy level, home literacy practices) and child assessments (e.g., cognitive ability and emergent literacy skills). Efforts were made to ensure that research assistants both resided in the counties in which the families lived and matched the families' race/ethnicity. For children who were in out-of-home childcare, FLP childcare visits were conducted by research assistants when children were 6, 15, 24, and 36 months of age as well as during pre-K and kindergarten.

Measures

Home literacy practices. The frequency of home literacy practices was assessed using 21 items from the Family Activities Questionnaire (FAQ; Vernon-Feagans, Odom, & Pancsofar, 2006), on a 5-point Likert-style scale: (1) *every day*, (2) *a few times/week*, (3) *once a week*, (4) *2-3 times a month*, and (5) *once a month or less*. Raw scores were obtained, reverse coded, and then the mean for each home literacy practice variables (i.e., child literacy practices, parent literacy practices, and parent-child literacy practices) was calculated. Higher scores indicated greater frequency of literacy practices. *Child literacy practices* included five items related to practices children engage in on their own, such as “*Look at a book or magazine by himself/herself*” ($\alpha = .56$). *Parent literacy practices* included eight items related to practices parents engage in on their own, such as “*Read an adult book (not including religious material)*”, ($\alpha = .69$). *Parent-child literacy practices* included eight items related to practices in which

parents engage with their children, such as “*Tell your child the names of new objects and people (i.e. names of animals)*” ($\alpha = .77$). Nine non-literacy related items (e.g., *Take your child to a fast food restaurant*) were not included (see Appendix A for full measure).

Child language and literacy skills. Child language and literacy skills included *expressive vocabulary, use of language in discourse, receptive vocabulary, letter-word identification, and phonological awareness.*

Language skills at 36 months. Two language skills were measured at 36 months of age: expressive vocabulary and language use in discourse.

Expressive vocabulary at 36 months of age was assessed using the Expressive Communication Subscale of the Preschool Language Scale, 4th Edition (PLS-4; Zimmerman, Steiner, & Pond, 2002). The child was asked to name and describe objects, express quantity, and use grammar and syntax ($\alpha = .91$). Scores were obtained, and then the mean was calculated. The standard score was used in analyses.

Language use in discourse at 36 months of age was assessed using the Adaptive Language Inventory (ALI; Feagans & Farran, 1978). The ALI was designed as a teacher tool to assess children’s narrative and discourse skills on a 5-point scale, where 1=*well below average* to 5=*well above average*. Children’s teachers at childcare completed the ALI. A sample item included: [*Target Child*] “Asks questions about information which is unclear to him/her” ($\alpha = .97$). Raw scores were obtained, and then the mean was calculated. The standard score was used in analyses.

Language and literacy skills in pre-K. Four language and literacy skills were used at pre-K: receptive vocabulary, language use in discourse, letter-word identification, and phonological awareness.

Receptive vocabulary in pre-K was assessed using the Peabody Picture Vocabulary Test, 4th Edition (PPVT-4; Dunn & Dunn, 2007). Children were asked to select one of four pictures that best represented the meaning of the word verbally presented by an examiner ($\alpha = .95$). The standard score was used in analyses.

Language use in discourse in pre-K was assessed using the Adaptive Language Inventory (ALI; Feagans & Farran, 1978). The pre-K teacher completed this measure as described above ($\alpha = .98$). The raw scores were obtained, and then, the mean was calculated. The standard score was used in analyses.

Letter-word identification in pre-K was assessed using the Letter-Word Identification subtest of the Woodcock-Johnson III (WJ; McGrew & Woodcock, 2001). The first subset of items assessed letter identification; subsequent items assessed word identification with gradual increase in complexity level ($\alpha = .92$, see McGrew & Woodcock, 2001). The standard score was used in analyses.

Phonological awareness in pre-K was assessed using the phonological awareness subtest of the Test of Pre-K Early Language (TOPEL; Lonigan, Wagner, Torgeson, & Rashotte, 2007). This subtest measured word elision and blending abilities. For the first 12 items, the administrator asked children to say a word, and then, after dropping out a specific sound (elision), asked children to identify what was left. For 15 subsequent items, children were assessed in blending (separating and combining sounds to make a word; $\alpha = .91$; Lonigan et al., 2007). The standard score was used in analyses.

Language and literacy skills in kindergarten. Three language and literacy skills were used at kindergarten: vocabulary, letter-word identification, and phonological awareness.

Picture Vocabulary in kindergarten was assessed using the Picture Vocabulary subtest of the Woodcock-Johnson III Tests of Cognitive Abilities (PV; (Woodcock, McGrew, & Mather, 2001). Children were initially asked to select a picture that best represented the meaning of the word verbally presented by an examiner and gradually to name the object depicted in a picture ($\alpha = .92$; Woodcock-Johnson et al., 2001). The standard score was used in analyses.

Letter-word identification in kindergarten was assessed using the Letter-Word Identification subtest of the Woodcock-Johnson III (see measure description above; $\alpha = .92$; McGrew & Woodcock, 2001). The standard score was used in analyses.

Phonological awareness in kindergarten was assessed using the phonological awareness subtest of the Test of Pre-K Early Language (see measure description above; $\alpha = .91$; Lonigan, et al, 2007). The standard score was used in analyses.

Covariates. A number of background characteristics were collected and used as covariates, including *child gender, race, and cognitive ability; state of residence, income-to-needs ratio, maternal education level, maternal literacy level, and maternal weekly work hours; and weekly hours the child spent at childcare.*

Child characteristics. Child gender (0 = girls; 1 = boys) and race (0 = non-African American; 1 = African American) were reported by the child's primary caregiver. Child cognitive ability³ was assessed at 15-months using the Bayley Scales of Infant Development-II (Bayley, 1993); producing a mental development index (MDI), which is consistent of several tasks measuring children's cognitive development ($\alpha = .78$).

³The sample included few children with an MDI score less than 70 ($n = 109$, 10%), which could be considered as an indicator of a neurodevelopmental impairment (Wilson-Costello et al., 2005). These children, however, were not identified as having a disability. The FLP investigators looked over children's IEPs over the first 36 months and asked parents about whether their child was diagnosed with a special need. Because parents gave inconsistent responses, this information could not be used in FLP.

Family characteristics. State of residence was a dummy variable including Pennsylvania and North Carolina (0 = PA; 1 = NC). The income-to-needs ratio was calculated dividing the total annual income for a family by the federal poverty threshold for a family of that size and composition at each time point. The average of the income-to-needs ratio (6-36 months) was used for this study. Maternal education level was a categorical variable consisting of 12 categories capturing the education level completed, which ranged from 1 = *less than high school* to 12 = *Ph.D.* The maternal education level was averaged from 6 to 36 months. Maternal literacy level was measured when the child was at two months of age using 29 items of the reading subtest of the Kaufman Functional Academic Skills Test ($a = .72$; Kaufman & Kaufman, 1994). Caregivers, including mothers who were able to read at an eighth-grade level completed the questionnaires by themselves. Caregivers reading below eighth-grade level received assistance in completing the questionnaires. Maternal weekly work hours included the average number of hours worked per week in all jobs and was averaged from 6 to 36 months.

Childcare characteristics. Number of hours per week children spent in a nonparental childcare was averaged from 6 to 36 months.

Data Analysis Plan

All analyses, including descriptive and regression analyses were employed using SAS 9.3. To answer the research question about the relationship of the three types of home literacy practices (child literacy practices, parent literacy practices, and parent-child literacy practices) at 36 months of age and children's language and literacy outcomes at 36 months, in pre-K, and in kindergarten, regression analyses were conducted.

Prior to regression analyses, multiple imputation that created 20 imputed data sets was conducted to account for missing data within the sample. Multiple imputation is considered one

of the most robust estimating methods to address missing data issues (Graham, Olchowski, & Gilreath, 2007; Shafer & Graham, 2002). This procedure involved three steps: a) Using PROC MI, an imputation model was formulated and missing values were imputed; b) Analyses in each complete data set was performed to estimate relationship among variables; c) Using PROC MIANALYZE, data were analyzed based on the output produced from the two previous steps (Berglund & Heeringa, 2014).

Descriptive analyses were conducted using the non-imputed datasets and regression analyses were conducted using the imputed data sets. In the imputation model, all variables of interest at 36 months, all control variables at each time point, and child outcomes at 36 months, in pre-K, and in kindergarten were included. Following imputation, the three types of home literacy practices were created and control variables captured from 6 to 36 months averaged. Continuous control variables and variables of interest were mean-centered after imputation and prior to regression analyses. The three types of home literacy practices were regressed on each outcome: expressive language (PLS) and language use (ALI) at 36 months; vocabulary (PPVT), language use (ALI), letter-word identification (LWI), and phonological awareness (PA) in pre-K; and vocabulary (PV) and letter-word identification (LWI) in kindergarten, totaling eight regressions. In each regression, a host of background characteristics, including child gender, race, and mental development index; state of residence, maternal education, literacy skills, maternal weekly work hours; and a number of weekly hours spent at childcare were added as control variables. Effect sizes were calculated using Cohen's *d*.

CHAPTER FOUR

Results

Descriptive Information

Descriptive information on demographic and childcare characteristics appear in Table 1. Fifty percent of the sample included girls ($n = 563$) and 43% African American children ($n = 480$). The majority of the families resided in North Carolina ($n = 666$, 60%). The average of income-to-needs ratio was 1.80, with a range of 0 to 15.50, suggesting that families were struggling with incomes just above the 2006 federal poverty levels. Mothers had completed high school and some additional training on average. Children spent 21 hours per week on average in a childcare setting.

Frequency of child literacy practices. Mothers reported that their children *pretended to “write” or scribble* ($M = 4.64$, $SD = 0.65$), *looked at a book by themselves* ($M = 4.51$, $SD = 0.78$), and *told a story* ($M = 4.38$, $SD = 1.13$) at least a few times a week on average. They also reported that their children *recited words from the Bible or other religious material* ($M = 2.49$, $SD = 1.62$) and *helped make a card or letter for someone* ($M = 2.05$, $SD = 1.26$) a few times a month. Overall, children engaged in literacy practices on their own at least a few times a week on average. In the analyses, the total score of child literacy practices ($M = 3.61$, $SD = 0.67$) was used.

Frequency of parent literacy practices. Mothers reported *reading a newspaper or magazine* ($M = 3.53$, $SD = 1.37$), *making a grocery list or to-do list* ($M = 3.08$, $SD = 1.27$), and *reading an adult book* ($M = 2.57$, $SD = 1.55$) once a week on average. Mothers also reported

that they engaged in practices, including *reading the Bible or religious material* ($M = 2.36, SD = 1.52$), *reading a church newsletter/bulletin* ($M = 2.08, SD = 1.20$), *using written recipes* ($M = 2.05, SD = 1.26$), *using a dictionary and/or encyclopedia* ($M = 1.94, SD = 1.24$), and *sending a card or letter to a friend or relative* ($M = 1.69, SD = 1.01$) between once a month and 2-3 times a month on average. Overall, mothers engaged in literacy practices on their own two to three times a month on average. In the analyses, the total score of parent literacy practices ($M = 2.41, SD = 0.74$) was used.

Frequency of parent-child literacy practices. Mothers reported that they *told their child the names of new objects and people* ($M = 4.75, SD = 0.58$), *sang songs or said rhymes with their child* ($M = 4.71, SD = 0.66$), and *helped the child learn numbers* ($M = 4.51, SD = 0.78$) on a daily basis. Most mothers also indicated that they *looked at or read books with child* ($M = 4.43, SD = 0.85$) at least a few times a week; just over half of them reported that they read to their children on a daily basis ($n = 662, 59\%$). Other parent-child literacy practices taking place at least a few times a week were *helping the child learn alphabet sounds* ($M = 4.32, SD = 1.00$) and *helping the child learn how to write letters/words* ($M = 4.07, SD = 1.21$). *Telling your child a story about your childhood or a story about your family* seemed to notably vary among participants. Mothers reported that on average they engaged in this activity once a week to a few times a week ($M = 3.65, SD = 1.37$) with 35% of them ($n = 392$) engaging in this activity daily. *Visiting the library* occurred once a month ($M = 1.65, SD = 1.11$). Overall, mothers engaged with their children in literacy practices a few times a week on average. In the analyses, the total score of parent-child literacy practices ($M = 4.01, SD = 0.59$) was used. The mean and standard deviation of each home literacy practice appear in Table 2 and the frequencies of each literacy practice appear in Table 3 as well as in figures 2, 3, and 4.

Correlations for all analysis variables are presented in Table 4. Child literacy practices were significantly correlated in the right direction with all child outcomes at three time points, with expressive language ($r = .28, p < .001$), language use in discourse at three years ($r = .22, p < .001$), receptive vocabulary at pre-K ($r = .19, p < .0001$), language use at pre-K ($.26, p < .001$), letter-word identification at pre-K ($r = .16, p < .001$), phonological awareness at pre-K ($r = .18, p < .0001$), vocabulary at kindergarten ($.16, p < .001$), letter-word identification at kindergarten ($r = .14, p < .001$), and phonological awareness at kindergarten ($r = .15, p < .001$). Parent literacy practices are significantly and positively correlated with child expressive language skills at three years (PLS) ($.08, p = .008$), use of language in discourse at pre-K ($r = .089, p = .0116$), and letter-word identification at pre-K ($r = .08, p = .012$). Parent-child literacy practices was significantly correlated with expressive language at pre-K (PLS) ($r = .10, p = .0017$) and language use in discourse at pre-K ($r = .09, p = .008$). There was also some interrelation among the three types of home literacy practices. The child literacy practices composite was positively correlated with parent-child literacy practices ($r = .48, p < .001$) and parent literacy practices ($r = .41, p < .001$). The parent-child literacy practices was also positively correlated with parent literacy practices ($r = .32, p < .001$).

Home Literacy Practices and Child Language Skills at 36 Months of Age

In order to answer the research question about the associations between home literacy practices at 36 months of age and child outcomes concurrently, two regression analyses were run: one predicting to expressive language and one predicting to language use in discourse. Regression results appear in table 5.

Expressive language. Child literacy practices at 36 months of age were significantly and positively associated with child expressive language (PLS) concurrently at 36 months above and

beyond a number of control variables ($B = 4.40, p < .001, d = 0.28$). Neither parent literacy practices ($B = -0.83, p = .17$) nor parent-child literacy practices ($B = -0.10, p = .90$) were significantly associated with child expressive language at 36 months.

Language use in discourse. Child literacy practices at 36 months of age were significantly and positively associated with language use in discourse (ALI) at 36 months above and beyond control variables ($B = 0.26, p < .001, d = 0.31$). Neither parent literacy practices ($B = 0.02, p = .74$) nor parent-child literacy practices ($B = -0.10, p = .18$) were significantly associated with children's expressive language at 36 months.

Home Literacy Practices and Child Language and Literacy Skills at Pre-K

In order to answer the research question about the associations between home literacy practices at 36 months of age and child outcomes concurrently, four regression analyses were run: one predicting to expressive language, one predicting to language use in discourse, one predicting to letter-word identification, and one predicting to phonological awareness.

Regression results appear in table 6.

Receptive vocabulary. Child literacy practices at 36 months of child age were significantly and positively associated with child vocabulary skills in pre-K above and beyond control variables ($B = 3.55, p < .001, d = 0.22$). Neither parent literacy practices ($B = -0.31, p = .62$) nor parent-child literacy practices ($B = -0.50, p = .53$) were significantly associated with child vocabulary skills in pre-K).

Language use in discourse. Child literacy practices at 36 months of child age were significantly and positively associated with language use in discourse in pre-K above and beyond control variables ($B = 0.22, p < .001, d = 0.25$). Neither parent literacy practices ($B = 0.01, p =$

.85) nor parent-child literacy practices ($B = 0.00, p = .99$) were significantly associated with language use in discourse in pre-K.

Letter-word identification. Child literacy practices at 36 months of child age were significantly and positively associated with letter-word identification in pre-K above and beyond control variables ($B = 2.16, p = .003, d = 0.16$). Neither parent literacy practices ($B = -0.09, p = .88$) nor parent-child literacy practices ($B = -0.22, p = .79$) were significantly associated with letter-word identification in pre-K.

Phonological awareness. Child literacy practices at 36 months of child age were significantly and positively associated with phonological awareness in pre-K above and beyond control variables ($B = 4.16, p < .001, d = 0.29$). Neither parent literacy practices ($B = -0.84, p = .21$) nor parent-child literacy practices ($B = -1.45, p = .08$) were significantly associated with phonological awareness in pre-K.

Home Literacy Practices and Child Language and Literacy Skills at Kindergarten

In order to answer the research question about the associations between home literacy practices at 36 months of age and child outcomes in kindergarten, three regression analyses were run: one predicting to picture vocabulary, one predicting to letter-word identification, and one predicting to phonological awareness. Regression results appear in table 7.

Picture vocabulary. Child literacy practices at 36 months of child age were significantly and positively associated with child vocabulary skills in kindergarten above and beyond control variables ($B = 2.04, p < .001, d = 0.20$). Neither parent literacy practices ($B = -0.53, p = .22$) nor parent-child literacy practices ($B = 0.18, p = .76$) were significantly associated with child vocabulary skills in pre-K).

Letter-word identification. Child literacy practices at 36 months of child age were significantly and positively associated with letter-word identification in kindergarten above and beyond control variables ($B = 2.37, p < .001, d = 0.20$). Parent literacy practices were not significantly associated with letter-word identification in kindergarten ($B = -0.47, p = .38$). Parent-child literacy practices were also significantly but negatively associated with child letter-word identification skills in kindergarten ($B = -1.43, p = .04, d = 0.12$).

Phonological awareness. Child literacy practices at 36 months of age were significantly and positively associated with phonological awareness in kindergarten above and beyond control variables ($B = 3.18, p < .001, d = 0.22$). Parent literacy practices were significantly and negatively associated with phonological awareness in kindergarten ($B = -1.40, p = .02, d = 0.10$) but parent-child literacy practices were not significantly associated with phonological awareness in kindergarten ($B = -0.39, p = .61$).

CHAPTER FIVE

Discussion

Few studies have explored the associations between frequencies of home literacy practices and child emergent literacy skills in families residing in rural areas of high poverty. Using the bioecological theory, the present study sought to investigate the frequency of child literacy practices, parent literacy practices, and parent-child literacy practices at 36 months of age in relation to child language and literacy skills at 36 months, in pre-K, and in kindergarten. A unique feature of this study was the sample, which helped provide a broad understanding of the home literacy practices and children's language and literacy development among families living in high-poverty rural areas. The study yielded three noteworthy findings. First, children engaged in literacy practices at home frequently by themselves. Second, mothers frequently engaged in a variety of literacy practices with their children. Third, child literacy practices at 36 months were significantly and positively associated with all outcomes of child language and literacy at 36 months, pre-K, and kindergarten.

Frequency of Home Literacy Practices in High-Poverty Rural Areas

An encouraging aspect of the results of this study is that children living in rural areas of high poverty engaged in a variety of home literacy practices by themselves or with their parents. These findings echo previous studies involving children from low-income backgrounds (Raikes et al., 2006; Wasik & Hindman, 2010). Many of the children in the present study pretended to write or scribbled, looked at books by themselves, and engaged in oral storytelling at least a few times a week. More than half of the children engaged in such practices on a daily basis. The

majority of mothers told their children the names of objects, animals, and people; sang songs with them; and helped them learn numbers every day.

Most mothers, over half of them (59%), read to their children on a daily basis, whereas, on average, mothers engaged in this activity two-to three times a week. This might seem a low percentage of mothers reading to their children daily, but it is actually consistent with recent findings in a nationally representative sample, in which half of parents in the U.S. read to their 1- to 5-year-old children every day (US Census Bureau, 2014). Similarly, analyzing national data collected via the National Household Survey in 1995, Yarosz and Bennett (2001) found that half of the parents (51%) read to their 2-year-old children every day and 22% read to their children 2 to 3 times a week.

Two academically-focused parent-child literacy practices, *helping children learn alphabet sounds* and *helping children learn letters*, also occurred a few times a week on average. At this young age, some parents may engage in literacy practices with their children for the purpose of entertainment rather than as a way to foster language and literacy development (Skibbe, Bindman, Hindman, Aram, & Morrison, 2013). In the present sample, however, more than half of the mothers reported engaging with their children in direct teaching of alphabet sounds and letters on a daily basis or at least a few times a week. Previous studies have argued that mothers' beliefs about what children should know before they enter school may be related to the literacy practices they promote at home (Barbarin, et al., 2008; Wasik & Hindman, 2010). In their study, Kim and colleagues (2005) found that parents who valued more academic-related skills, such as knowing the letters, tended to incorporate more teaching-oriented practices at home. By contrast, parents who primarily valued social skills preferred play-based activities (Kim, Murdock, & Choi, 2005). Furthermore, some parents believe that *teaching academics* is a

teacher's role rather than the parents' one, and therefore only teachers assume this role (Reese & Gallimore, 2000). Because experiences promoted at home often reflect parent beliefs and cultural values (Harkness & Super, 1993; Rogoff, 2003), it could be that mothers may have viewed literacy practices as part of their role to teach (Reese & Gallimore, 2000).

Similarly, cultural values and traditions may play a role on the frequency of another parent-child literacy practice, oral storytelling, which occurred at least once a week on average in this study. Oral storytelling is usually reported to be particularly prevalent in some cultural groups, such as African American families (Heath, 1982; Reese & Gallimore, 2000). The present study involved both African American and non-African American families. Investigating whether oral storytelling was more predominant in African American households in the FLP sample could provide important information. Then again, post hoc analyses indicated that oral storytelling was not a more frequent activity in the African American group compared to the non-African American one in this study. Nonetheless, untangling the potential influence of cultural values on home literacy practices would be worth investigating.

One of the least frequent parent-child literacy practices occurring in these households was *taking their children to a library*, which took place once a month on average. This may appear less frequent compared to other home literacy activities; yet it seems consistent with previous studies involving low-income children in urban areas (Wasik & Hindman, 2010). According to a national survey, 49% of families took their kindergarten-1st grade children to a library the month before the distribution of the survey (NCES, 2005), which is a lower percentage compared to the 67% of mothers in the present study. Visiting the library or a bookstore once a month was a typical response in another study, which utilized data from preschool Korean children and their families located in two metropolitan areas in Korea (Kim, 2009). Given the low-income rural

context in the present study and the potential limited access to libraries in these areas, going to the library once a month may not be as infrequent. Future studies could aim to explore whether parents residing in rural areas of high poverty have difficulties accessing libraries.

Another notable finding in this study was that some home literacy practices were related to religiosity. Interestingly, religious texts (e.g., Bible) were utilized in home literacy practices. Children as young as 36 months old recited words from the Bible on average two to three times a month. Parents reported reading the Bible or other religious materials as well as church newsletters or bulletins two to three times a month on average. Practicing a religion actively may be a source of literacy for families (Teale, 1986). Particularly in African American communities, church has been considered a rich environment in which cultural and literacy practices can be practiced (McMillon & Edwards, 2008). For example, McMillon and Edwards (2008) illustrated that children in African American communities are given opportunities to read the Bible, scriptures, stories with biblical themes, songbooks written in poetic form, and weekly bulletins; sing in the choir; and welcome visitors during a sermon. In addition, children in these communities often need to give speeches and prayers on special occasions as well as perform short dramatic skits, which offer ample opportunities for rehearsals, which promotes practice with their oratory skills (McMillon & Edwards, 2008). The role of church or other social institutions on home literacy practices in the particular sample remains to be investigated.

Lastly, parent literacy practices occurred less frequently and showed more variation within this sample. The most frequent activities, reading a newspaper and making a grocery list, occurred on average once a week. Future research to increase our understanding of factors that influence parents' participation in literacy practices on their own would be important.

Child Literacy Practices and Child Language and Literacy Skills

Findings from this study supported the bioecological theory by demonstrating that proximal processes between children and materials influence child early language and literacy skills in a rural context of high poverty, above and beyond child, family, and childcare characteristics (e.g., child mental ability, maternal literacy skills). Overall, results indicated that 36-month-old children who engaged more frequently in literacy practices on their own (e.g., looking at books by themselves) had better language and literacy skills concurrently and longitudinally. More specifically, these children had a richer vocabulary and demonstrated better language use in discourse at 36 months of age. They also displayed a richer vocabulary, recognized more letters and words, and exhibited higher phonological awareness in pre-K and in kindergarten compared to children who engaged in literacy practices on their own less frequently. Moreover, they demonstrated greater language use in discourse not only at three years of age but in pre-K as well. Language use in discourse was not measured in kindergarten.

The frequency of children's engagement in their own literacy practices has been viewed as a way of measuring their literacy interest (Baroody & Diamond, 2012; Baroody & Diamond, 2016). Few studies have examined child literacy interest by assessing the frequency of children's engagement in literacy practices on their own (Johnson et al., 2008; Scarborough et al., 1991). Consistent with those studies, the present study found associations with vocabulary skills (Baroody & Diamond, 2016; Johnson et al., 2008; Farver et al., 2006), letter-word identification (Baroody & Diamond, 2016; Bracken & Fischel, 2008), and phonological awareness (Baroody & Diamond, 2016; Johnson et al., 2008) concurrently. Furthermore, the present study extends prior findings by linking child literacy practices with an additional language measure: language use in discourse. In addition to concurrent associations, this study

demonstrated that the frequency with which children participated in literacy practices on their own at 36 months of age were associated with their language and literacy skills in pre-K and in kindergarten as well.

Additionally, most prior studies involved older children either in preschool years (Baroody & Diamond, 2016; Bracken & Fischel, 2008; Farver et al., 2006) or in early elementary school years (Johnson et al., 2008), especially in urban areas or in nationally representative samples. The present study included a younger sample of children – 36 months old – residing in rural areas of high poverty. These findings are important given the fact that early language and literacy skills are related to preschool and kindergarten literacy competences, which in turn facilitate later reading acquisition (Storch & Whitehurst, 2002).

The fact that children's independent involvement in literacy practices of their own was associated with their language and literacy skills should not be interpreted to mean that parents were not important in supporting child language and literacy development. Parents may have arranged their home environment in such a way that facilitated easy access to literacy materials and invited children to engage in literacy practices of their own. Parents also may have encouraged children to engage with literacy materials at home and promoted independence. In addition, child literacy practices at 36 months of age may have been influenced by previous literacy activities that took place at home at a previous time. For example, parents may have engaged in parent-child literacy practices when their children were younger. As such, by the time children became 36 months old, they were already familiar with home literacy practices and more motivated to engage in literacy activities on their own. Future research could investigate how child literacy practices at age of 36 months were formed.

Parent Literacy Practices and Child Language and Literacy Skills

Parent literacy practices were not significantly associated with child language and literacy outcomes at 36 months, pre-K, and kindergarten. Some previous studies have also failed to link parent literacy practices with child language skills (Bracken & Fischel, 2008) and with child literacy competencies in low-income preschool samples (Baroody & Diamond, 2012; Bracken & Fischel, 2008). It appears that parent literacy practices when children are younger, at 36 months old, were not associated with their language and literacy skills in this rural sample either. Some studies linked parent literacy practices with child language (Davidse et al., 2011; Van Steensel, 2006) and with child literacy skills (Davidse et al., 2011). These studies, however, included school age children either at kindergarten or in first and second grade, whereas some studies that failed to find associations between parent literacy practices and child emergent literacy skills used preschool children (Baroody & Diamond, 2012; Bracken & Fischel, 2008). Although more studies are needed to confirm this supposition, it appears that children's age may play a role in these associations. Future studies comparing the impact of parent literacy practices at different child ages on child emergent literacy skills may be worthwhile.

Furthermore, the studies that found significant associations between parent literacy practices and child language and literacy skills that were reviewed in this dissertation utilized middle-income families or socioeconomically diverse families residing in urban areas (Davidse et al., 2011). On the other hand, studies that failed to find associations used mostly low-income samples (Baroody & Diamond, 2012; Bracken & Fischel, 2008). The present study used a socioeconomically diverse sample in high poverty rural areas. Perhaps, socioeconomic status and community context play a role in the frequency with which parents engage in literacy practices on their own, which in turn may have an impact on child skills. In the present study,

less than half of mothers engaged in literacy practices on their own on a daily basis. More specifically, 31% of mothers read newspapers, 13% read an adult book other than a religious text, and 13% read a religious material on a daily basis. These low frequencies may explain the lack of an association between child literacy practices and child language and literacy skills in the present study.

Another explanation may be that these literacy practices did not actually occur in the presence of children. Nevertheless, the importance of parents' engagement in their own literacy practices should not be undermined. Parents who, for example, read for pleasure in the presence of their children may convey that literacy is a desirable, pleasant, and valuable activity and therefore, they may motivate children to participate in literacy-related activities either with their parents or by themselves (Burgess, 2005). Prior studies have shown that the frequency with which parents read for pleasure was positively associated with shared book reading in a preschool sample in Australia (Brown et al., 2013). The authors suggested that there might be indirect associations between parents' literacy profiles and child literacy skills (Brown et al., 2013). Future studies should investigate the potential indirect impact of parent literacy behaviors on children's skills through other variables, such as child literacy interest.

Furthermore, parents who are frequent readers tend to have more advanced vocabulary and more complex syntactic knowledge, and therefore, they may speak to their children in a more sophisticated way, thereby exposing children to more syntactically complex language (Sénéchal et al., 2008). Previous studies investigating parent-child language interactions have found that maternal language diversity and complexity during mother-child verbal interactions predicted child language and literacy skills (Vernon-Feagans et al., 2013). This suggests that parent literacy behaviors may indirectly influence child language and literacy skills through their

language interactions with their children. Future studies should investigate whether the frequency with which parents engage in their own literacy practices are associated with child emergent literacy skills through another variable, such as parent-child verbal interactions.

Negative associations between parent literacy practices and kindergarten

phonological awareness. The negative association between parent literacy practices at 36 months of age and child phonological awareness in kindergarten may be due to social desirability (Johnson et al., 2008). Parents who read less and engage in few literacy activities may report instead that they read more and that they engage in more literacy activities. Another explanation may be that parents who read more to themselves and engage in literacy practices on their own may take the time from reading to their children and engaging in parent-child literacy practices (Johnson et al., 2008) that influence phonological awareness skills. A prior study found a similar negative association between parent literacy habits and child phonological skills (Foy & Mann, 2003). Similarly to Johnson and colleagues (2008), Foy and Mann (2003) suggested that parents who spend more time in their own literacy activities, spend less time teaching specific skills to their children. Therefore, future research should aim to explain this negative effect in relation to phonological awareness skills.

Parent-Child Literacy Practices and Child Language and Literacy Skills

The hypothesis that parent-child literacy practices would be associated with child language and literacy skills concurrently and longitudinally was not supported by the findings of this study. Surprisingly, associations between parent-child literacy practices, on one hand, and children's oral language and literacy skills, on the other hand, were not significant when measured concurrently at 36 months or longitudinally at pre-K and kindergarten. Most prior studies have shown significant associations between parent-child literacy practices and child

language and literacy skills (Bracken & Fischel, 2008; Farver et al., 2006; Kim et al., 2015; Wiegel et al., 2010). Yet several previous studies have also failed to associated parent-child literacy activities with child language (Baroody & Diamond, 2012; Weigel et al., 2006) and literacy skills (Frijters, et al., 2000; Weigel et al., 2006).

These discrepancies may be attributable to a number of reasons, such as the different measures, research designs, and age of children used in diverse studies that impede making comparisons among studies. For example, several of the previous studies utilized broader parent-child literacy practices than the one used in the present study. Kim and colleagues (2015), for example, in their measure of parent-child literacy practices, included not only the frequency of parent-child literacy interactions but also the number of children's books at home. The present study focused more specifically on the frequency of parent-child literacy practices, without including any passive aspects of the home literacy environment, such as the number of books at home. Broader measures tend to be more robust in relation to child outcomes (Rodriquez et al., 2009). Perhaps, the measure of parent-child literacy practices employed in the current study may have been inadequate to detect links with specific early language and literacy skills. In other words, the frequency of direct engagement of parents with children in literacy alone may not have been as strongly associated with children's language and literacy skills in this sample.

Similarly, the parent-child literacy practices frequencies showed limited variability as most of the items had almost a mean of five, indicating that most parents reported they participated in each parent-child literacy practice every day. If I had more variability in participants' responses on the frequency of the literacy practices with which they engaged, I might had found significant results.

Another explanation of the non-significant associations between parent-child literacy practices and children's language and literacy skills might be that children benefit more from the *quality of parent-child interactions* during a literacy activity rather than from the activity itself (Schmitt et al., 2011). Previous studies have described, for example, a variety of reading strategies, such as asking questions, emphasizing on vocabulary, and pointing out letters adults may use while reading (Justice & Ezell, 2002; Justice et al., 2009; Piasta et al., 2012; Wasik & Bond, 2001; Whitehurst & Lonigan, 1998). A number of studies have demonstrated that these strategies have been advantageous for children's skills with preschool children of low-income backgrounds (Silverman, Crandell, & Carlis, 2013; Wasik & Bond, 2001; Wasik, Bond, & Hindman, 2006). Other studies documented that the level of support parents provide during literacy practices, such as helping children write letters as opposed to parents writing letters for them, may play a role in developing children's skills (Skibbe et al., 2013). Parents' support during parent-child interactions, such as shared book reading, by providing external prompts and opportunities to children for practicing narrative production, may also help children construct narratives (Sénéchal et al., 2008) and therefore may be associated with language outcomes. The measure used in this study, however, captured the frequency of parent-child literacy practices rather than the quality of such interactions. Future studies should investigate the quality of parent-child literacy practices specifically in families residing in low-income rural communities.

A related explanation may be that more complex language and literacy skills, such as letter-word identification may be enhanced by parent-child literacy practices provided later in children's lives than the home literacy practices encouraged when children are 36 months old. Rodriguez and colleagues (2011) emphasized that the *timing* of providing home literacy practices played a role in child language and literacy outcomes in their sample. For example, home

literacy practices measured at preschool age influenced letter-word identification skills; literacy practices measured at the first year of age did not (Rodriquez et al., 2011). In the current study, home literacy practices were measured at 36 months of age only. At this age, parents may pay less attention or they may be less intentional in teaching letters and words during their literacy practices with their children at such a young age. Descriptive analyses showed that the majority of parents (80%) focused on telling their children the names of new objects and people on a daily basis, whereas fewer parents (48%) engaged in direct teaching of letters and words every day. Therefore, the less time they spent on literacy practices that focus on letter-word identification, the less these specific literacy skills would have been developed. Perhaps home literacy practices measured later in a child's life may have had an impact on at least some of the skills measured in pre-K and kindergarten. Alternatively, parents may not have the necessary knowledge on how to promote complex skills, such as phonological awareness, at home (Sénéchal et al., 2014).

Similar to the previous argument, the difficulty finding significant associations between parent-child literacy practices and child phonological awareness may be due to the fact that phonological awareness is a complex skill (Foy & Mann, 2003). As aforementioned, this ability is comprised mainly by two components: *rhyme awareness*, which indicates the awareness of larger units, such as syllables, and *phoneme awareness*, which indicates the awareness of smaller units, such as phonemes (Foy & Mann, 2003). Research suggests that the development of each of these components of phonological awareness may occur at different time points, and each one of them may be sensitive to different types of instruction (Foy & Mann, 2003). For example, Foy and Mann (2003), in their literature review, explicated that development of phoneme awareness may require explicit instruction, though rhyme awareness may develop spontaneously.

In the present study, at least some parent-child literacy practices, such as singing songs and telling rhymes, could influence rhyme awareness. Therefore, it is plausible that in the present study, parent-child literacy practices may have influenced parts of child phonological awareness, such as rhyme awareness, which could not be detected with the measure used. Future studies should clarify these associations.

The non-significant associations may also be attributable to the fact that a number of control variables, including maternal education and maternal literacy abilities, were included in this study. Numerous studies have shown that demographic characteristics are associated with child language and literacy outcomes (e.g., Weigel et al., 2006). Silinskas and colleagues (2010) found that the significant association between shared book reading and kindergarteners' reading competencies disappeared after controlling for demographic variables, such as maternal education. The authors speculated that maternal education played a role in the amount of reading that took place at home, which in turn influenced child reading development (Silinskas et al., 2010). Post hoc analyses in the current sample indicated that even by not controlling for parental education and literacy, the associations between parent-child literacy practices and child language and literacy skills remained insignificant except for the association with phonological awareness, which appeared significant but in the opposite direction. Perhaps the impact of family demographics on the association between parent-child literacy practices and child skills may be more complex and therefore, they deserve further investigation. Future studies should explore the role of demographic characteristics on child language and literacy skills as well as on the frequency with which home literacy practices take place at home in this and other rural samples.

Other family variables, such as child characteristics, may play a role in the associations between parent-child literacy practices and child emergent literacy skills as well. It might be the case that the frequency of parent-child literacy practices may benefit children based on their initial literacy competences. In the case of phonological awareness, in particular, it has been suggested that this skill is influenced more by child early language and literacy skills than directly by the home literacy practices (Hood et al., 2008; Sénéchal, 2006; Sénéchal & LeFevre, 2002; Sénéchal et al., 2014). For instance, Foy & Mann (2003) claimed that the relationship between home literacy environment and child phonological skills may be mediated by child vocabulary, letter knowledge, or phonological strength. Future analyses employing rural samples should explicate whether the association between parent-child literacy practices and child emergent literacy skills differ based on child characteristics.

The impact of parent-child literacy practices on child literacy outcomes may also differ between children who have disabilities and children without disabilities. The current sample controlled for child cognitive ability as measured by the MDI. In this sample, 109 (10%) children had an MDI score less than 70, which may be considered an indicator of a neurodevelopmental impairment (Wilson-Costello et al., 2005). Future studies should investigate the role of parent-child literacy practices on this subsample compared to the whole sample of FLP.

It is important to note, however, that parent-child literacy practices may not be associated with concurrent and later language and literacy skills in the presence of child literacy practices in the current sample. In other words, the inclusion of child literacy practices in the same model may mask the effects of parent-child literacy practices. As aforementioned, the frequency with which children engage in their own literacy practices is considered a way of measuring child

literacy interest. Child literacy interest has been found to mediate the relationship between parent involvement in literacy practices with their children on one hand, and child language skills, on the other hand (Farver et al., 2006). Therefore, in the present study, children's interest in literacy practices indexed by their frequency with which they engage in literacy practices on their own may be the driver of their language and literacy learning. Furthermore, previous studies suggested that parent-child literacy practices and child literacy interest, especially when they are both measured using parental reports, may be interrelated (Crain-Thoresen & Dale, 1992). Therefore, a relationship may exist between the two predictors, playing a role in the relationship between parent-child literacy practices and child outcomes.

Negative associations between parent-child literacy practices and letter-word identification in kindergarten. One negative association between parent-child literacy practices at 36 months of age and child letter-word identification in kindergarten was revealed. The more frequently parents engaged with children in literacy practices at age of three, the worse children's letter-word identification skills were in kindergarten. Nevertheless, this negative association may not necessarily indicate negative effects of frequent parent-child literacy practices on child kindergarten letter-word identification abilities. Similar negative relationships were found in previous studies with preschool (Kim, 2009) and older children (Silinskas, et al., 2012). Several explanations may account for these negative relations.

One explanation might be that parents may increase their involvement in parent-child literacy practices when they see that their children struggle with literacy acquisition (Kim, 2009; Silinskas et al., 2012). Although they are trying to help their children who do poorly, they may not be able to improve their letter-word identification skills by merely increasing the frequency of parent-child literacy practices. Previous studies showed that parents were involved in

teaching activities more when their school-age children were doing poorly in literacy (Silinksas et al., 2010; Silinksas, Leppanen, et al., 2010). Future studies aiming to investigate this pattern in younger ages would offer important information. It is puzzling though that the association between parent-child literacy practices was negatively associated with *kindergarten* but not with *preschool* letter-word identification abilities. Perhaps this might be due to the fact that letter-word identification ability in kindergarten is more advanced than in preschool. Future studies should examine at which age children's letter-word identification skills benefit more from parent-child literacy practices promoted at 36 months of age.

An alternative explanation is that parents may lack the necessary reading skills to help their children who struggle with literacy. Prior studies showed that parent literacy skills played a role in the relationship between parent-child literacy practices and child literacy competencies (Johnson et al., 2008). Future studies should unpack whether parent-literacy practices improve child letter-word identification skills based on parents' reading abilities.

Limitations of the Study and Future Directions

Some limitations of this study are notable. A limitation, not unique to this study, was that home literacy practices were reported by mothers. From one point of view, it may be difficult for mothers to estimate the frequencies of home literacy practices, particularly of all three types that were examined in the present study (Farver et al., 2006). On the other hand, it is plausible that social desirability may have influenced mothers to over-report the frequencies of each type of home literacy practices (Farver et al., 2006). Nevertheless, the variability of responses in this sample, particularly in the parent literacy practices, indicate that social desirability may have not played a significant role. Although research has suggested that maternal reports of home literacy practices are accurate measures of home literacy practices (e.g., Raikes et al., 2006), cross-

validating these data with other methods, such as home observations, may be necessary (Farver et al., 2006).

Moreover, data from additional sources (e.g., interviews, observations) may provide a more nuanced picture of home literacy practices. For example, observations will offer new information on the ways parents engage with their children in specific literacy activities, such as reading or looking at books together. Previous research has shown great variability in ways parents read books to their children (Bracken & Fischel., 2008). Some may incorporate dialogic reading strategies, such as asking open-ended questions, encouraging the child to comment and respond on the story, connecting the story with the child's daily life, and prompting the child to describe a picture in the book (Lonigan & Whitehurst, 1998). In a low-income Latino sample, three different reading styles emerged: the *storybuilder-labelers* who encouraged the child to talk about the story, the *story-tellers* who narrated a rich story making limited requests to children, and the *abridged story-tellers* who followed similar narrating style with the previous one but narrated a shorter story (Casper, 2009). Furthermore, observations would offer information on the type and quality of materials with which children engage in their own literacy practices.

Future work could also examine the role of fathers and other family members (e.g., grandparents, siblings) in shaping and implementing literacy practices at home (e.g., Sawyer, Cychk, Sandilos, & Hammer, 2016). The participation of extended family (siblings, aunts, and grandparents) in literacy practices with children has been highlighted in several studies (Farver et al., 2013). In a low-income Latino sample, Farver and colleagues (2013) found that parents encouraged older children to help their siblings with reading in English. Rogoff (2003) had also emphasized the remarkable role of extended family members, siblings and even other members of the community in taking care of, playing, and interacting with children.

From a methodological standpoint, the home literacy practices measure may have not been as robust since the child literacy practices composite produced a Cronbach's alpha of .56, which can be considered low. Future studies should aim to consider more robust and reliable measures of child literacy practices, including observational measures.

This study examined home literacy practices among children only at one time point, at 36 months of age. To better understand the trajectories of home literacy practices as related to language and literacy acquisition, longitudinal data at multiple time points may be necessary. As the bioecological model posits, proximal processes tend to become more complex as children get older and, therefore, examining these processes over time might provide more meaningful information (Bronfenbrenner & Morris, 2006). For example, child literacy interest measured by the frequency of engagement in their own literacy practices could be measured across time points to examine its stability and relation to child language and literacy outcomes over time. If child literacy interest changes across time, it might alter the association between child literacy practices and other aspects of the home literacy environment as well as with child language and literacy skills (Baroody & Diamond, 2012).

Furthermore, children develop within the larger cultural system (Super & Harkness, 1993). Because culture is not static (Rogoff, 2003), cultural changes continuously influence parent beliefs and their home language and literacy practices (Super & Harkness, 1993). Evidence also shows that immigrant parents adapt to the dominant culture and that parents' models of literacy development change as they are influenced by school expectations and practices (Reese & Gallimore, 2000). Future research is needed to uncover how such cultural changes influence adaptations in the practices parents embrace at home.

Additionally, this study investigated home literacy practices within a low-income rural context, which was a strength, but did not examine the impact of rurality on home literacy practices. Future studies should explore how contextual factors of rurality, such as access to resources, population density or distance from a metropolitan area, social connectedness, and contact with nature are associated with home literacy practices (Clarke et al., 2017).

Similarly, future work should try to unravel how demographic characteristics influence the frequency of home literacy practices and their association with child language and literacy skills. Income level, educational background, neighborhood quality, parent employment, and access to high quality child care center may play a role in these associations (Panscofar et al., 2010). Attending high quality child care, for example, may introduce parents to different literacy and language practices increasing not only the frequency but also the variety of experiences provided at home (Marcella, Howes, & Fullini, 2015). In addition, variables such as English language proficiency and immigration status, (Marcella et al., 2015) as well as acculturation level and their association with practices endorsed at home, deserve further examination (Farver et al., 2006).

Another limitation and suggestion for future research concerns the possibility of bidirectional effects among the different types of home literacy practices. For instance, the frequency with which children engage in their own literacy practices may influence the frequency with which parents engage in literacy-related practices with their children and vice versa. Weigel and colleagues (2006) found that parent-child language and literacy practices influenced child literacy interest measured by the frequency with which children interacted with books by themselves, the frequency with which children asked to be read to, and the duration they looked at books by themselves. Other studies indicated that parent literacy practices

influence parent-child engagement in home literacy practices (Machida, Taylor, & Kim, 2002; Reese, 2012; Sawyer et al., 2016). Therefore, indirect paths between a type of home literacy practices and child language and literacy skills through another type of home literacy practices should be examined.

Likewise, reverse causality between home literacy practices and child emergent literacy skills may be possible (Johnson et al., 2008). Home literacy practices may influence child language and literacy development, yet child emergent literacy skills may influence home literacy practices (Johnson et al., 2008). It may be that children with more advanced language skills may engage in literacy practices more frequently (Johnson et al., 2008). Or, because parents adjust their interactions with their children based on children's perceived understanding (Hammer et al., 2005; Sawyer et al., 2016), more advanced child initial skills may encourage parents to be more involved in parent-child literacy practices. Future research using a person-centered approach in investigating which children benefit more from engaging in various types of home literacy practices would be valuable (Meng, 2015).

Significance of the Study

Despite these limitations, the present study has several strengths and contributes to the literature in several ways. First, the current study showed variability in home literacy practices among families living in rural areas of high poverty. This challenges the notion that families from impoverished environments do not expose their children in a variety of home literacy practices (Farver et al., 2006).

Second, the study indicated that children can impact their own language and literacy development, especially within families living in low-income rural areas by engaging in literacy practices on their own more frequently. Moreover, a wide variety of emergent literacy skills

were measured in this study. The frequency with which children participated in literacy practices on their own, an indicator of their literacy interest, was associated not only with vocabulary but also with language use in discourse as well as with letter-word identification and phonological awareness.

Third, the study examined longitudinal associations between child literacy practices at 36 months of age and child language and literacy skills in pre-K and in kindergarten. These findings suggest that encouraging children to participate in their own literacy practices at such a young age when they build their emergent literacy skills may be important in the long-term.

Fourth, child literacy practices were influential on child emergent literacy skills above and beyond a host of demographic variables, such as maternal education, maternal literacy skills, and family income-to-needs ratio; child characteristics, such as child gender, race, and cognitive ability; and childcare characteristics, such a number of hours spent in childcare.

Fifth, the sample was a representative sample of families living in rural areas of high poverty, which can be more easily generalized to other samples living in low-income rural areas. In addition, the study included an ethnically and socioeconomically diverse sample including both White and African American families, poor and non poor families, capturing variability on income and race in the sample.

Implications for Practice and Policy

This study highlighted that families living in rural areas of high poverty used a variety of literacy practices at home at varying frequencies. For instance, mothers reported visiting the library at least once a month. Because of reduced exposure to libraries in rural areas, lack of access may negatively influence children's reading skills in kindergarten (Clarke et al., 2017).

Providing easier access to libraries and other educational opportunities could be helpful (Barnyak, 2011).

Findings of this study have provided further evidence that children can have an impact on their own language and literacy development. Making books available at home and encouraging children interact with literacy materials may be an effective approach to literacy growth (Johnson et al., 2008). Thus, interventions and other programs can help children become interested in and engage in literacy practices on their own (Malin et al., 2014). This approach may be particularly helpful in families who are not able to provide high-quality parent-child literacy experiences (Malin et al., 2014), in families in which parents may feel less comfortable with parent-child literacy practices that depend on their own literacy skills (Johnson et al., 2008), and in families in which parents have limited time available to interact with their children in literacy-related activities (Johnson et al., 2008). Because child literacy interest is considered a key element that lays the foundation for language and literacy growth, intervention and prevention efforts should focus on how children can be motivated to interact with literacy materials and engage in their own literacy practices.

In addition, these findings have implications for school curricula and classroom practices. Finding ways to encourage child literacy interest in the classroom may be especially effective (Baroody & Diamond, 2012). Knowing the literacy practices with which children prefer to engage on their own may provide important information for classroom instruction (Baroody & Diamond, 2012). Additionally, developing and providing measures in which teachers can easily access and assess children's literacy interest in specific literacy practices may be helpful for instruction purposes (Baroody & Diamond, 2012).

Educational and social organizations could capitalize on rural families' strengths in relation to home literacy and help them maximize opportunities for engagement in literacy practices. For example, childcare providers and educators could loan books to parents. Barnyak (2011) noted that in her study, all parents from rural backgrounds used books and literacy materials provided by local educational centers, which allowed them to engage in shared-reading activities with their 3-7 year old children. Childcare providers could also offer parents new ways of using home literacy practices they already engage in and introduce them to literacy practices they participate in less frequently (Marcella et al., 2014; Wasik & Hindman, 2010). Mothers have shown adaptation of their literacy practices based on recommendations by educators and other professionals, suggesting that they are willing to learn new practices that are beneficial for their children (Sawyer et al., 2016). For example, teachers can encourage parents to incorporate specific reading strategies and ways of promoting phonological awareness during shared book reading (Cristofaro & Tamis LeMenda, 2011).

This encouragement will be more effective if it occurs in a way that respects parents' home literacy experiences or families' efforts in supporting child language and literacy development, honoring home culture (Delpit, 2006). For example, suggesting that parents use a specific way of reading books to their children may not be suitable for some cultural groups. For example, in her study, Caspe (2009) showed that some reading styles, such as the co-constructive approach, during which children are more active participants in a shared book reading activity had lower impact on children's print concept skills than more narrating style (*storytelling and abridged-storytelling*) during which children take a more passive role (Caspe, 2009). The researcher underscored that some cultural groups may have difficulties implementing a specific reading style because it does not match their cultural modes of communicating and interacting

with the child (Casper, 2009). Therefore, their attempt to incorporate an unfamiliar way of reading may not be successful (Casper, 2009). Childcare providers and teachers should take this into consideration and encourage culturally-responsive practices at homes and in their classrooms.

On the other hand, this study also has implications for teachers and childcare providers who could learn from the literacy practices occurring at their students' homes. Teachers should not assume that children coming from rural areas are not interested in literacy or that African American children are incapable of learning (Delpit, 2006). Instead, teachers can facilitate transition from home to school (Jarret et al., 2017). Teachers should demonstrate that they see home literacy experiences as strengths rather than as deficits (Jarret et al., 2015) and encourage parents to share their children's home and community literacy practices with the school (McMillon & Edwards, 2008). For example, acknowledging the rich oral traditions of specific groups (Jarret et al., 2015) and providing opportunities for oral language exposure in the classroom is especially vital (McMillon & Edwards, 2008).

Because some cultures promote group work, and children are familiar with doing things together (Rogoff, 2003), providing opportunities to children to work together around a literacy activity could also be beneficial. Rogoff (2003) had emphasized that at least older children would gather and in their effort, for example, to repair a bicycle, they would brainstorm and read instructions together on how to fix a bike. Similarly, simpler literacy activities encouraging younger children to interact with each other and work together could be beneficial. An example of such activity could be to tell stories to each other under the guidance and facilitation of an adult or an older child.

Lastly, policy decisions should incorporate ways to support local services and families living in low-income rural areas to enrich children's early literacy.

Conclusion

The current study included families in one of the few developmental studies that created a large representative sample of families living in low-income rural areas (Vernon-Fegans et al., 2013). The diversity of this sample is also notable as it included both poor and non-poor, African American and non-African American families. Given this unique sample, the present study is one of the first to examine home literacy practices, especially at 36 months of age, in a socioeconomically and ethnically diverse sample of families living in rural areas of high poverty. Findings from this study suggested that frequent home literacy practices not only take place in these families but also have an impact on children's language and literacy skills, highlighting in this way the capacities of families living in low-income rural communities. Given that children in this sample scored at the national average in pre-K and kindergarten, home literacy practices in these families appear to be especially valuable.

Table 1.

Descriptive data (n = 1,117)

<i>Variables</i>	<i>Mean or %</i>	<i>SD</i>	<i>Minimum</i>	<i>Maximum</i>
Child outcomes				
36 months				
Receptive vocabulary (PLS)	98.11	15.69	50.00	50.00
Use of language in discourse (ALI)	3.15	0.84	1.00	5.00
Pre-K				
Expressive vocabulary (PPVT)	94.20	15.97	43.00	138.00
Use of language in discourse (ALI)	3.41	0.87	1.00	5.00
Letter-Word Identification (LWI)	98.36	13.37	60.00	156.00
Phonological Awareness (PA)	92.93	14.37	54.00	129.00
Kindergarten				
Vocabulary (PV)	99.10	10.01	1.00	140.00
Letter-Word Identification (LWI)	107.41	12.13	59.00	150.00
Phonological Awareness (PA)	102.38	13.84	54.00	122.00
Child characteristics				
Gender (% male)	50.40			
Race (% African American)	42.97			
Cognitive ability (15 months)	96.36	10.75	59.00	132.00
Family characteristics				
State (% North Carolina)	59.62			
Income-to needs ratio (6 to 36 months)	1.80	1.50	0.00	15.50
Maternal literacy level (2 months)	95.68	11.92	55.00	134.00
Maternal education level (6 to 36 months)	14.67	2.66	6.25	22.00
Number of weekly work hours (6 to 36 months)	19.86	15.53	0.00	70.00
Childcare characteristics				
Number of weekly hours in childcare (6 to 36 months)	20.76	16.09	0.00	74.50

Notes: PLS = Preschool Language Scale, ALI = Adaptive Language Inventory, PPVT = Peabody Picture Vocabulary Test, LWI = Letter-Word Identification/Woodcock-Johnson, PA = Phonological Awareness/Test of Pre-K Early Language.

Table 2.

Descriptive data on home literacy practices items (n = 1,117)

<i>Variables</i>	<i>Mean</i>	<i>SD</i>	<i>Minimum</i>	<i>Maximum</i>
Child Literacy Practices	3.61	0.67	1.00	5.00
Pretend to “write” or scribble	4.64	0.65	1.00	5.00
Look at a book or magazine by himself/herself	4.51	0.78	1.00	5.00
Tell you a story of at least a few sentences about something that happened in real life of made-up or pretend story	4.38	1.13	1.00	5.00
Recite words from the Bible or other religious material	2.49	1.62	1.00	5.00
Help make a card or letter at home for someone	2.05	1.26	1.00	5.00
Parent-Child Literacy Practices	4.01	0.59		
Tell your child the names of new objects and people	4.75	0.58	1.00	5.00
Sing songs or say rhymes with your child	4.71	0.66	1.00	5.00
Help your child learn numbers	4.51	0.78	1.00	5.00
Look at or read books to your child	4.43	0.85	1.00	5.00
Help your child learn the alphabet sounds	4.32	1.00	1.00	5.00
Help your child learn how to write letters/words	4.07	1.21	1.00	5.00
Tell your child a story about your childhood or a story about family	3.65	1.37	1.00	5.00
Take your child to the library	1.65	1.11	1.00	5.00
Parent Literacy Practices	2.41	0.74	1.00	5.00
Read a newspaper or magazine	3.53	1.37	1.00	5.00
Make a grocery list or to-do list	3.08	1.27	1.00	5.00
Read an adult book (not including religious material)	2.57	1.55	1.00	5.00
Read the Bible or religious material	2.36	1.52	1.00	5.00
Read a church newsletter/bulletin	2.08	1.20	1.00	5.00
Use written recipes	2.05	1.26	1.00	5.00
Use a dictionary/encyclopedia (can be on the web)	1.94	1.24	1.00	5.00
Send a card or letter to a friend or relative	1.69	1.01	1.00	5.00

Table 3.

Frequencies of home literacy practices

	Once a month	Two to three times a month	Once a week	A few times a week	Every Day
Child Literacy Practices					
Look at a book or magazine by himself/herself	10 (1%)	34 (3%)	36 (3%)	338 (30%)	699 (63%)
Pretend to “write” or scribble	8 (1%)	14 (1%)	16 (1%)	293 (26%)	786 (70%)
Tell you a story of at least a few sentences about something that happened in real life of made-up or pretend story	79 (7%)	16 (1%)	64 (6%)	203 (18%)	754 (68%)
Recite words from the Bible or other religious Materials	532 (48%)	86 (8%)	125 (11%)	168 (15%)	205 (18%)
Help make a card or letter at home for someone	523 (47%)	270 (24%)	136 (12%)	118 (11%)	70 (6%)
Parent-Child Literacy Practices					
Tell your child the names of new objects and people (i.e. names of animals)	5 (0%)	11 (1%)	18 (2%)	187 (17%)	896 (80%)
Sing songs or say rhymes with your child	10 (1%)	16 (1%)	21 (2%)	195 (17%)	875 (78%)
Help your child learn numbers (e.g., how many 3 is)	12 (1%)	26 (2%)	54 (5%)	315 (28%)	710 (64%)
Look at or read books to your child	19 (2%)	33 (3%)	55 (5%)	348 (31%)	662 (59%)
Help your child learn the alphabet sounds	39 (4%)	45 (4%)	69 (6%)	325 (29%)	639 (57%)
Help your child learn how to write letters/words	89 (8%)	56 (5%)	83 (7%)	353 (32%)	536 (48%)
Tell your child a story about your childhood or a story about your family	137 (12%)	115 (10%)	138 (12%)	334 (30%)	392 (35%)
Take your child to the library	746 (67%)	170 (15%)	102 (9%)	41 (4%)	56 (5%)
Parent Literacy Practices					
Read a newspaper or magazine	136 (12%)	145 (13%)	180 (16%)	306 (27%)	350 (31%)
Read an adult book (not including religious material)	445 (40%)	169 (15%)	106 (9%)	214 (19%)	183 (16%)
Make a grocery or to-do list	182 (16%)	168 (15%)	294 (26%)	326 (29%)	147 (13%)

Read the Bible or religious material	537 (48%)	119 (11%)	129 (12%)	189 (17%)	143 (13%)
Use a dictionary/encyclopedia (can be on the web)	608 (54%)	211 (19%)	107 (10%)	141 (13%)	50 (5%)
Use written recipes	548 (49%)	235 (21%)	112 (10%)	175 (16%)	47 (4%)
Read a church newsletter/bulletin (No 26)	536 (48%)	149 (13%)	286 (26%)	103 (9%)	43 (4%)
Send a card or letter to a friend or relative	656 (59%)	263 (24%)	109 (10%)	64 (6%)	25 (2%)

Table 4.

Correlations

	1	2	3	4	5	6	7
Child outcomes at 36 months							
1. Receptive vocabulary (PLS)	-						
2. Use of language in discourse (ALI)	0.43*	-					
Child outcomes at pre-K							
3. Expressive vocabulary (PPVT)	0.60*	0.31*	-				
4. Use of language in discourse (ALI)	0.40*	0.43*	0.40*	-			
5. Letter-Word Identification (LWI)	0.41*	0.20*	0.47*	0.36*	-		
6. Phonological Awareness (PA)	0.47*	0.32*	0.57*	0.37*	0.45*	-	
Child outcomes at Kindergarten							
7. Vocabulary (PV)	0.50*	0.26*	0.63*	0.37*	0.40*	0.44*	-
8. Letter-Word Identification (LWI)	0.36*	0.19*	0.38*	0.33*	0.63*	0.38*	0.44*
9. Phonological Awareness (PA)	0.47*	0.26*	0.53*	0.41*	0.43*	0.51*	0.44*
Child characteristics							
10. Gender (% male)	-0.15*	-0.13*	-0.05	-0.17*	-0.08*	-0.10*	0.04
11. Race (% African American)	-0.20*	-0.09	-0.45*	-0.07*	-0.09*	-0.31*	-0.23*
12. Cognitive ability (15 months)	0.41*	0.41*	0.45*	0.29*	0.20*	0.32*	0.32*
Family characteristics							
13. State (% North Carolina)	-0.08*	-0.02	-0.37*	0.00	-0.12*	-0.20*	-0.17*
14. Income-to needs ratio (6 to 36 months)	0.34*	0.09	0.40*	0.17*	0.27*	0.25*	0.34*
15. Maternal literacy level (2 months)	0.35*	0.10*	0.44*	0.22*	0.34*	0.36*	0.34*
16. Maternal education level (6 to 36 months)	0.37*	0.05	0.41*	0.19*	0.36*	0.28*	0.30*
17. Number of weekly work hours (6 to 36 months)	0.17*	0.03*	0.10*	0.12*	0.15*	0.08*	0.14*
Childcare characteristics							
18. Number of weekly hours in childcare (6 to 36 months)	0.09*	0.08	-0.07*	0.12*	0.07*	-0.05	-0.00
Home literacy practices							

19.	Child literacy practices	0.28*	0.22*	0.19*	0.26*	0.16*	0.18*	0.16*
20.	Parent literacy practices	0.10*	0.06	0.04	0.09*	0.04	0.02	0.05
21.	Parent-child literacy practices	0.08*	0.00	0.04	0.09*	0.08*	0.03	0.03

Note: † $p < .10$, * $p < .05$.

Table 4, cond't

Correlations

	8	9	10	11	12	13	14
Child outcomes at 36 months							
1. Receptive vocabulary (PLS)							
2. Use of language in discourse (ALI)							
Child outcomes at pre-K							
3. Expressive vocabulary (PPVT)							
4. Use of language in discourse (ALI)							
5. Letter-Word Identification (LWI)							
6. Phonological Awareness (PA)							
Child outcomes at Kindergarten							
7. Vocabulary (PV)							
8. Letter-Word Identification (LWI)	-						
9. Phonological Awareness (PA)	0.51*	-					
Child characteristics							
10. Gender (% male)	-0.07*	-0.10*	-				
11. Race (% African American)	-0.02	-0.30*	-0.00	-			
12. Cognitive ability (15 months)	0.18*	0.32*	-0.09*	-0.27*	-		
Family characteristics							
13. State (% North Carolina)	-0.00	-0.25*	-0.07*	0.62*	-0.29*	-	
14. Income-to needs ratio (6 to 36 months)	0.26*	0.29*	0.05	-0.38*	0.23*	-0.26*	-
15. Maternal literacy level (2 months)	0.32*	0.36*	-0.05	-0.33*	0.25*	-0.20*	0.46*
16. Maternal education level (6 to 36 months)	0.29*	0.30*	0.00	-0.23*	0.22*	-0.16*	0.57*
17. Number of weekly work hours (6 to 36 months)	0.15*	0.04	0.06	0.05	0.04	0.07*	0.41*
Childcare characteristics							

18. Number of weekly hours in childcare (6 to 36 months)	0.11*	-0.05	0.02	0.29*	-0.01	0.27*	0.15*
Home literacy practices							
19. Child literacy practices	0.14*	0.15*	-0.16*	-0.00*	0.14*	0.07*	0.06*
20. Parent literacy practices	-0.02	0.02	-0.04	-0.02	0.04	0.01	-0.00
21. Parent-child literacy practices	0.04	-0.01	-0.03	0.09*	0.01	0.11*	0.03

Table 4, Cond't

Correlations

	15	16	17	18	19	20	21
Child outcomes at 36 months							
1. Receptive vocabulary (PLS)							
2. Use of language in discourse (ALI)							
Child outcomes at pre-K							
3. Expressive vocabulary (PPVT)							
4. Use of language in discourse (ALI)							
5. Letter-Word Identification (LWI)							
6. Phonological Awareness (PA)							
Child outcomes at Kindergarten							
7. Vocabulary (PV)							
8. Letter-Word Identification (LWI)							
9. Phonological Awareness (PA)							
Child characteristics							
10. Gender (% male)							
11. Race (% African American)							
12. Cognitive ability (15 months)							
Family characteristics							
13. State (% North Carolina)							
14. Income-to needs ratio (6 to 36 months)							
15. Maternal literacy level (2 months)	-						
16. Maternal education level (6 to 36 months)	0.51*	-					
17. Number of weekly work hours (6 to 36 months)	0.16*	0.33*	-				
Childcare characteristics							
18. Number of weekly hours in childcare (6 to 36 months)	0.03	0.12*	0.65*	-			

Home literacy practices

19.	Child literacy practices	0.11*	0.13*	0.03	0.07*	-		
20.	Parent literacy practices	0.00	0.01	-0.00	0.06	0.48*	-	
21.	Parent-child literacy practices	0.04	0.14*	-0.04	-0.03	0.41*	0.31*	-

Table 5.

Regression results with 36-month child outcomes (n = 1,117)

Variable	PLS		ALI	
	<i>B</i>	<i>SE</i>	<i>B</i>	<i>SE</i>
Child characteristics				
Gender (1 = male)	-2.62**	0.81	-0.10	0.07
Race (1 = African American)	-2.42*	1.12	-0.12	0.10
Cognitive ability (15 months)	0.47***	0.04	0.02***	0.00
Family characteristics				
State of residence (1 = North Carolina)	4.22***	1.09	0.12	0.11
Income-to-needs ratio (6 to 36 months)	1.21***	0.38	-0.01	0.04
Maternal literacy level (2 months)	0.15***	0.04	0.01	0.00
Maternal education level (6 to 36 months)	0.92***	0.20	-0.03	0.02
Number of weekly work hours (6 to 36 months)	0.01	0.04	0.01	0.00
Childcare characteristics				
Number of hours at childcare (6 to 36 months)	0.02	0.03	0.00	0.00
Variables of interest				
Child literacy practices	4.40***	0.73	0.26**	0.07
Parent literacy practices	-0.83	0.61	0.02	0.07
Parent-child literacy practices	-0.10	0.78	-0.10	0.07

Notes: * $p < .05$. ** $p < .01$. *** $p < .001$. PLS = Preschool Language Scale, ALI = Adaptive Language Inventory.

Table 6.

Regression results with pre-K child outcomes ($n = 1,117$)

Variable	PPVT		ALI		LWI		PA	
	B	SE	B	SE	B	SE	B	SE
Child characteristics								
Gender (1 = male)	-0.83	0.81	-0.21***	0.06	-1.91*	0.78	-1.92*	0.89
Race (1 = African American)	-5.67***	1.15	-0.04	0.08	3.67**	1.16	-4.23***	1.27
Cognitive ability (15 months)	0.43***	0.04	0.02***	0.00	0.13**	0.04	0.31***	0.05
Family characteristics								
State of residence (1 = North Carolina)	-2.42*	1.09	0.17*	0.08	-2.55*	1.04	1.51	1.19
Income-to-needs ratio (6 to 36 months)	1.10**	0.38	0.02	0.03	0.54	0.36	-0.03	0.40
Maternal literacy level (2 months)	0.21***	0.04	0.01*	0.00	0.21***	0.04	0.24***	0.05
Maternal education level (6 to 36 months)	0.78***	0.21	0.01	0.01	0.98***	0.19	0.37	0.21
Number of weekly work hours (6 to 36 months)	0.01	0.04	0.00	0.00	0.03	0.04	0.05	0.04
Childcare characteristics								
Number of hours at childcare (6 to 36 months)	-0.03	0.04	0.00	0.00	0.01	0.03	-0.05	0.04
Variables of interest								
Child literacy practices	3.55***	0.74	0.22***	0.05	2.16**	0.72	4.16***	0.81
Parent literacy practices	-0.31	0.63	0.01	0.04	-0.09	0.64	-0.84	0.67
Parent-child literacy practices	-0.50	0.81	0.00	0.06	-0.22	0.79	-1.45	0.83

Notes: * $p < .05$. ** $p < .01$. *** $p < .001$. PPVT = Peabody Picture Vocabulary Test, ALI = Adaptive Language Inventory, LWI = Letter Word Identification, PA = Phonological Awareness.

Table 7.

Regression results with kindergarten child outcomes (n = 1,117)

Variable	PV		LWI		PA	
	B	SE	B	SE	B	SE
Child characteristics						
Gender (1 = male)	1.91***	0.58	-0.68	0.71	-1.37	0.80
Race (1 = African American)	-0.67	0.83	3.26**	1.04	-2.19	1.16
Cognitive ability (15 months)	0.21***	0.03	0.14***	0.04	0.26***	0.04
Family characteristics						
State of residence (1 = North Carolina)	0.34	0.79	0.79	0.96	-1.64	1.14
Income-to-needs ratio (6 to 36 months)	1.00***	0.26	1.00***	0.33	0.42	0.36
Maternal literacy level (2 months)	0.14***	0.03	0.23***	0.04	0.23***	0.04
Maternal education level (6 to 36 months)	0.23	0.14	0.48**	0.18	0.60*	0.20
Number of weekly work hours (6 to 36 months)	0.03	0.03	-0.01	0.03	-0.05	0.04
Childcare characteristics						
Number of hours at childcare (6 to 36 months)	-0.04	0.02	0.02	0.03	0.01	0.03
Variable of interest						
Child literacy practices	2.04***	0.51	2.37***	0.66	3.18***	0.73
Parent literacy practices	-0.53	0.44	-0.47	0.54	-1.40*	0.60
Parent-child literacy practices	0.18	0.44	-1.43*	0.71	-0.39	0.77

Notes: * $p < .05$. ** $p < .01$. *** $p < .001$. PV = Picture Vocabulary, LWI = Letter-word identification, PA = Phonological Awareness

Figure 1. Conceptual model

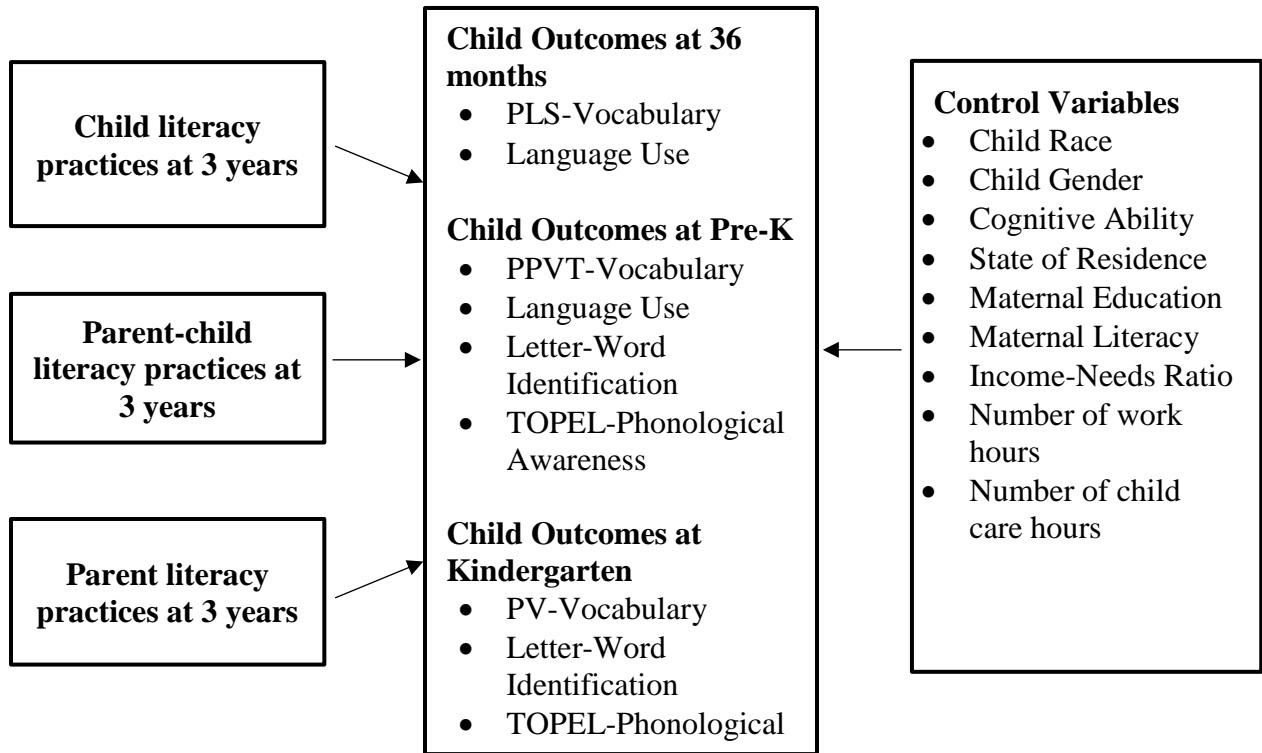


Figure 2. Frequencies of child literacy practices

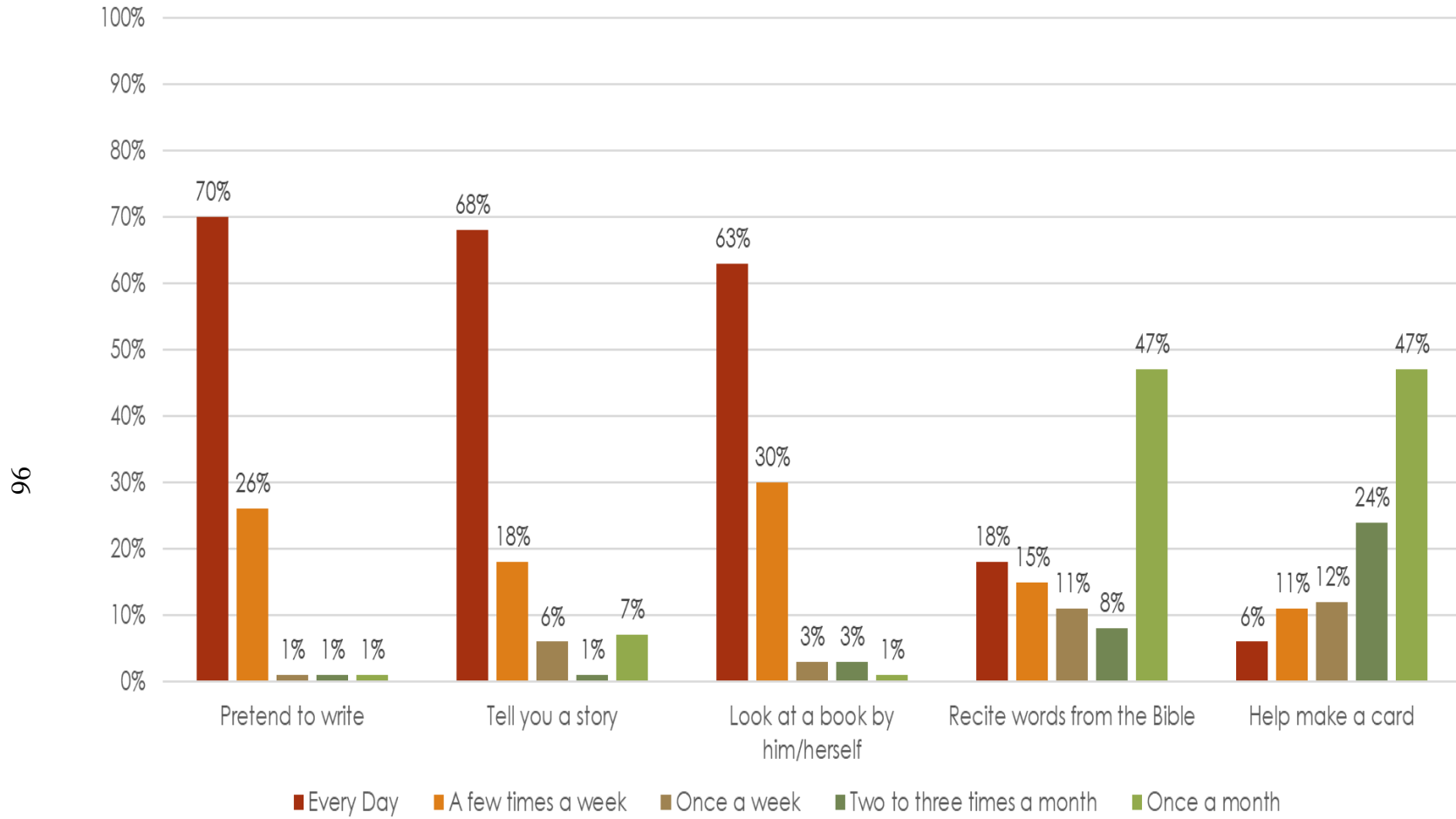


Figure 3. Frequencies of parent literacy practices

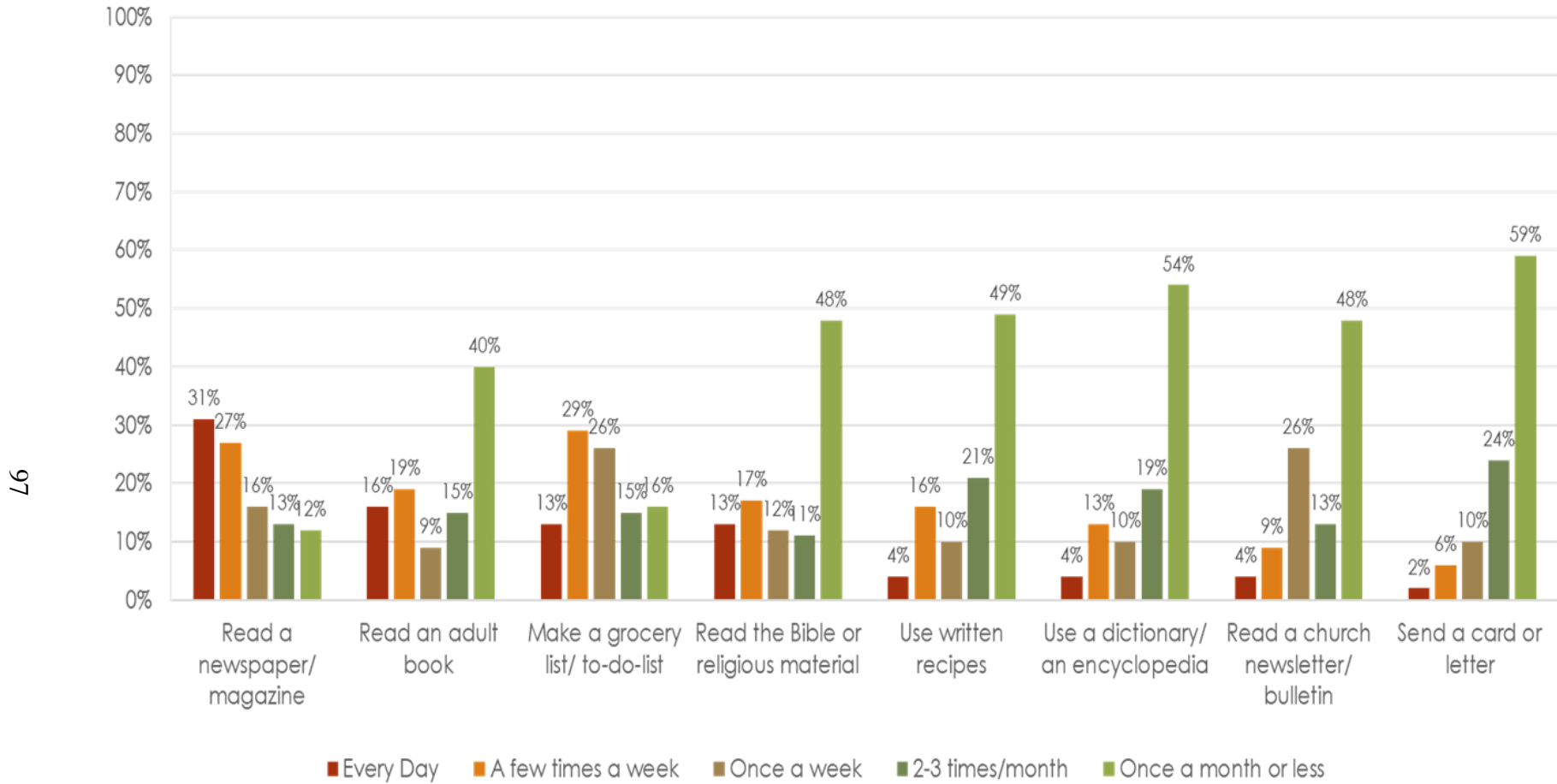
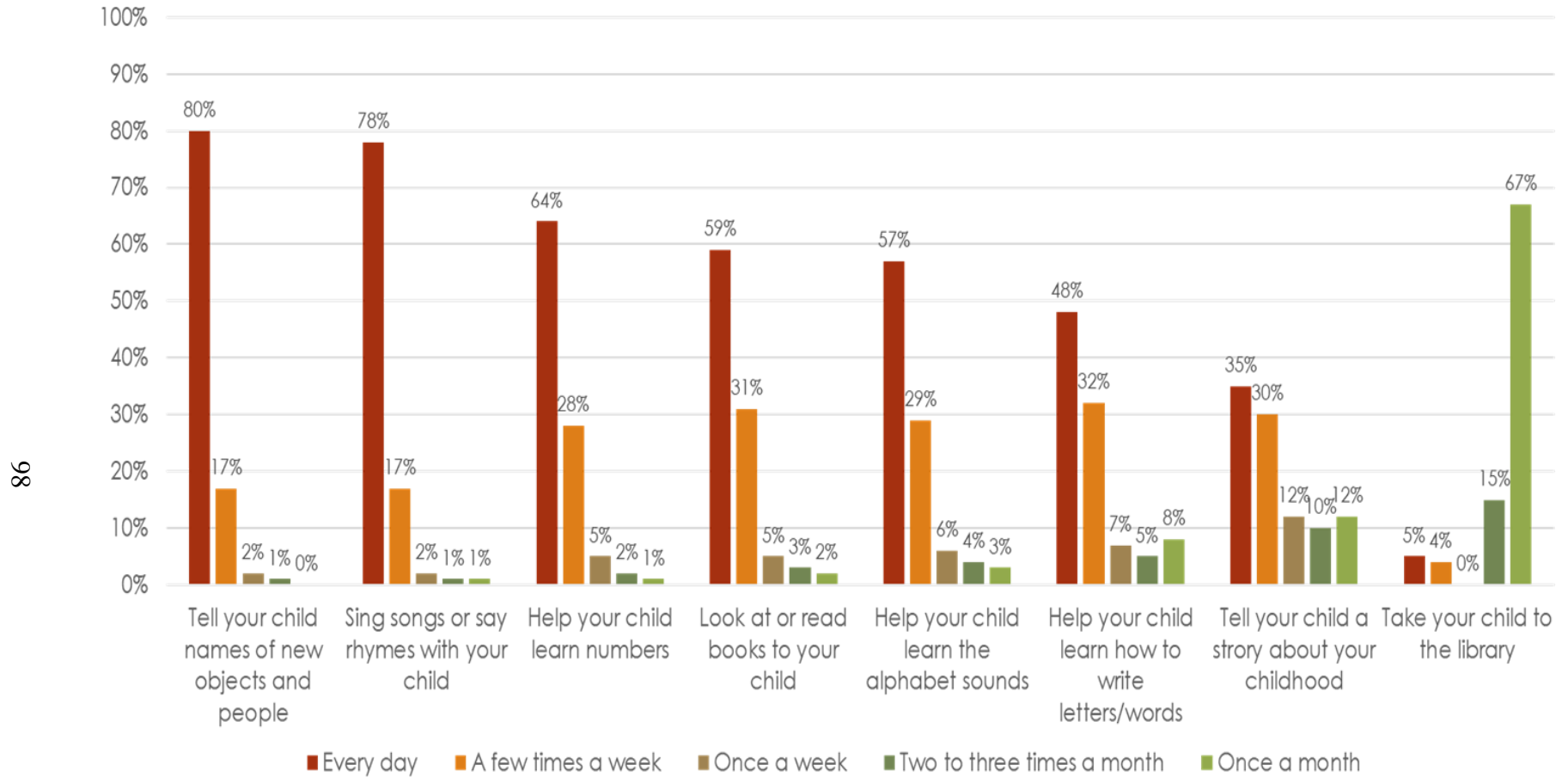


Figure 4. Frequencies of parent-child literacy practices



**APPENDIX: FAMILY ACTIVITIES QUESTIONNAIRE
(FAQ; VERNON-FEAGANS, ODOM, & PASCOFAR, 2006)**

Child Literacy Practices

1. Pretend to “write” or scribble
2. Look at a book or magazine by himself/herself
3. Tell you a story of at least a few sentences about something that happened in real life of made-up or pretend story
4. Recite words from the Bible or other religious material
5. Help make a card or letter at home for someone

Parent-Child Literacy Practices

1. Tell your child the names of new objects and people
2. Sing songs or say rhymes with your child
3. Help your child learn numbers
4. Look at or read books to your child
5. Help your child learn the alphabet sounds
6. Help your child learn how to write letters/words
7. Tell your child a story about your childhood or a story about your family
8. Take your child to the library

Parent Literacy Practices

1. Read a newspaper or magazine
2. Make a grocery list or to-do list
3. Read an adult book (not including religious material)
4. Read the Bible or religious material
5. Read a church newsletter/bulletin
6. Use written recipes
7. Use a dictionary/encyclopedia (can be on the web)
8. Send a card or letter to a friend or relative

Eliminated Non-Literacy-Related Items from Family Activities Questionnaire

Child Practices

1. Play with other children, including brothers and sisters and other playmates
2. Watch TV, a video or DVD without adults

Parent-Child Practices

1. Watch a TV program, video, or DVD with your child
2. Take your child shopping (grocery store, discount store, etc.)
3. Take your child to a fast food restaurant
4. Take your child to a community park or recreation building

5. Take your child to a church or Sunday School
6. Take your child to your workplace
7. Work with older children in the household on their school work

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