Impact of Telecoaching on the Emergent Literacy Skills of Four-Year Old Children

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The Impact of Telecoaching on the Emergent Literacy Skills of Four-Year Old Children

A Thesis

Submitted to Graduate Faculty of the
University of South Alabama
In partial fulfillment of the
Requirements for the degree of

Master of Science

In

Speech-Language Pathology

By
De’Asia Mariah Jackson
B.S., Speech and Hearing Sciences, 2020
May, 2022
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LIST OF ABBREVIATIONS

NELP  National Early Literacy Panel
SES  Socioeconomic Status
CELM  Comprehensive Emergent Literacy Model
SSD  Speech Sound Disorders
LI  Language Impairment
PALS  Play and Learning Strategies
PEER  Prompting the child to say something
CROWD  Comparison, recall, open-ended question, wh-questions, distancing questions
PROB  pauses, response, open-ended prompts, boosts
I-PCIT  internet delivered parent-child interaction therapy
PCIT  clinic-based therapy
QUILS  Quick Interactive Language Screener
ALL  Assessment of Language and Literacy
ABSTRACT

Jackson, De’Asia, Mariah, M.S., University of South Alabama, May 2022. The Impact of Telecoaching on the Emergent Literacy Skills of 4-Year-Old Children. Chair of Committee: Victoria Henbest, Ph.D.

The purpose of this project was to examine the impact of a 8-week virtual text-message based parent training program on the emergent literacy skills of four-year-old children. Prior to the training children were screened for typically developing language skills and completed measures of a variety of emergent literacy skills then eight parent-child dyads were randomly assigned to two groups. Each parent was provided specific strategies over 8-weeks to facilitate the development of various emergent literacy skills. Five parents received code-based strategies to facilitate Inside-Out skills such as alphabet knowledge, phonological awareness and print concepts, while 3 parent-child dyads received meaning-based strategies to facilitate Outside-In skills such as storytelling abilities and vocabulary. Following the program, the children’s emergent literacy skills were re-tested. On average, all participants’ emergent literacy scores were higher than at pre-test, although not all gains were statistically significant, and the size of the gains varied. The most substantial improvement appeared to be in the areas of Word Relationships and Listening Comprehension, which were measures of Outside-In skills. These preliminary findings lend initial support for considering text-based parent trainings as a way to support parents in facilitating their children’s early literacy skills.
CHAPTER I
INTRODUCTION

Emergent literacy is a term used to describe the development of literacy skills on a continuum that begins in the early childhood years (Whitehurst & Lonigan, 1998). Emergent literacy includes a wide range of skills such as phonological awareness, the ability to think about and manipulate speech sounds, and spoken language skills such as vocabulary knowledge and storytelling abilities (McGinty & Justice, 2009). Because these skills begin to develop in the early years of a child’s life, the home literacy environment including parental reading habits are instrumental in fostering the development of these skills. There are numerous factors within the home that influence the development of these skills, which include shared reading habits, frequency of library visits, and the amount of books in the home (Niklas et al., 2020). Many studies have found that children’s emergent literacy skills are a significant predictor of later literacy and academic success (e.g., Robert et al., 2005; Spira et al. 2005; Girolametto et al., 2012).

Various researchers have conceptualized emergent literacy skills into different models. Some researchers have categorized the skills into four components (e.g., literacy concepts and functions, writing composition, letter, and word knowledge, and listening comprehension; Mason & Stewart, 1990 as cited by Rohde, 2015). Others have divided the skills into two domains, phonological awareness, and written language awareness (Justice & Pullen, 2003). A relatively recent model, the Comprehensive Emergent Literacy Model, describes the development of emergent literacy skills as a collaborative process, suggesting that although each component of emergent literacy occurs in an individual sequence, each
component enhances the development of the other components (Rohde, 2015). One team of researchers describes emergent literacy using the *Outside-In, Inside-Out* model which conceptualizes the skills as interdependent domains. These domains are represented on a continuum with contextual knowledge on one side (*Outside-In* skills) and concepts of letters and sounds (*Inside-Out* skills) on the other side (Whitehurst & Lonigan 1998; Storch & Whitehurst, 2001).

It is important to examine emergent literacy skills because these skills are instrumental for later reading proficiency, as well as academic success, as determined by various research studies. The National Early Literacy Panel (NELP) provided a synthesis of numerous studies pertaining to emergent literacy skills and found that emergent literacy skills such as alphabet knowledge, print knowledge, listening comprehension, vocabulary, and phonological awareness are predictors of later reading success (e.g., Spira et al., 2005; Lonigan & Shanahan, 2009). Additionally, more recent longitudinal studies found that emergent literacy skills are predictive of later word identification and decoding skills (Wellman et al., 2011; Piasta et al., 2018).

Several studies have aimed to understand the relation between parent involvement and development of emergent literacy skills. A majority of results indicate that parent involvement, such as shared book reading and parental perception of literacy activities, is important for the development of literacy skills in children. From these studies, researchers concluded that shared book reading activities facilitate conversation between the parent and child and facilitate the child’s interest in literacy activities. (e.g., Ninio & Bruner, 1978; Wells, 1985; Payne et al., 1994; Senechal et al., 1998; Scarborough et al., 2001; Senechal & Lavre, 2002; Roberts et al., 2005; Hindman et al., 2008).
Researchers also have found a correlation between family variables, such as socioeconomic status (SES), and the development of emergent literacy skills (Froiland et al., 2014; Caroll et al., 2019; Esmaeeli et al., 2019). Socioeconomic status is determined by factors such as education, income, and occupation. No matter SES, shared book reading continues to be a reliable predictor for the development of emergent literacy skills (Bracken & Fischel, 2008). However, research indicated that children from lower SES homes are at a greater risk for underachievement due to the limited shared reading opportunities and lack of accessibility to books (Feitelson & Goldstein, 1986; Teale, 1986). Importantly, because of this relation between SES and a lack of accessibility to books, research teams have investigated the impact of book give away programs and parent training on children’s emergent literacy skills (De Bondt et al., 2020). Although the findings from these investigations are mixed, as a whole, they are promising in that parents can be trained to modify their book reading styles and that book giveaway programs increase accessibility to books, facilitating child participation in literacy activities such as shared book reading (Hannon et al., 2020; De Bondt et al., 2020).

Because research findings have indicated that home literacy practices influence children’s emergent literacy skills and later reading abilities and that children from lower SES homes tend to participate less in shared reading activities and have limited access to books, it is important to understand how parent training facilitates emergent literacy skills. Some researchers have found that parent training has a significant impact on facilitating Inside-Out skills (Ezell et al., 2000; Justice & Ezell, 2000; Reese et al., 2010), while others have found that it impacts facilitation of Outside-In skills (Lonigan & Whitehurst, 1998; Crain-Thoreson & Dale, 1999; Wing-Yin Chow & McBride-Chang, 2003; Aram et al.,
A meta-analysis conducted in 2008 by the National Early Literacy Panel indicated that parents can be taught to use book reading strategies that positively affect their children’s emergent literacy skills. Therefore, I am interested in examining whether training parents to use certain strategies aimed at supporting skills in each domain during shared book reading can facilitate emergent literacy skills. The training provided for the current study differs notably from previous investigations because of its delivery format. It was delivered fully virtual.

To my knowledge there has been only one study to date that virtually trained parents to facilitate emergent literacy skills. Akemoglu and colleagues (2021) used Zoom videoconferencing to train and coach parents to use language facilitating strategies during shared storybook reading with their 2-3-year-old children and found that with coaching, parents increased their use of the strategies and children’s engagement behavior also increased. The study, however, did not directly measure the children’s emergent literacy skills. Some investigators have used training in a videotape format to support parents in utilizing strategies for facilitating early literacy skills (e.g., Arnold, et al., 1994). Also, there have been studies in other areas of language and communication skills, such as children with autism spectrum disorder (ASD), that have used virtual parent training to facilitate use of behavioral management strategies. Results from these studies indicated parent satisfaction, continued utilization of provided strategies, and significant child improvement (Wainer & Ingersoll, 2015; Comer et al., 2017). Therefore, parent training in a remote format may be beneficial for parents, while continuing improvement and development of language and literacy skills.
The purpose of this study, then, is to determine how virtual parent training impacts the development of *Inside-Out* emergent literacy skills, (i.e., information within the printed words for the purpose of supporting the reader’s ability to convert sounds to letters, phonological awareness, and knowledge of the alphabet) and *Outside-In* skills (i.e., information that is external to the printed words and are instrumental in a child’s understanding of the meaning of the printed words such as vocabulary, conceptual knowledge, and comprehension of story structure) in four-year old children (Storch & Whitehurst, 2001). The current study provided books and additional materials to the families. The participants’ literacy and language skills were examined using a standardized test battery pre- and post- an eight-week emergent literacy enrichment tele-program. The participants were placed in one of two experimental groups. Each group received remote training that either targeted *Inside-Out* skills or *Outside-In* skills. At the end of the training period the participants’ performance on the standardized exam post-intervention was compared to their performance pre-intervention to not only determine if the remote parent training impacted the development of emergent literacy skills, but to also determine if the intervention types had a potential impact on the specific category of emergent literacy skills they were targeting.
CHAPTER II
REVIEW OF LITERATURE

1.1 What is Emergent Literacy?

Emergent literacy is the knowledge young children have about reading and writing that they learn before conventional literacy instruction (Justice & Pullen, 2003). The term ‘emergent literacy’ encompasses a wide range of skills including concepts about print knowledge, alphabetic knowledge, phonological awareness, and early spoken language skills such as vocabulary and storytelling. Print knowledge refers to the child’s knowledge of the form and functions of print and includes alphabet knowledge, emergent writing, and print concepts. Alphabetic knowledge refers to knowledge of the names of letters and to which sounds they correspond. Phonological awareness refers to the child’s ability to isolate and manipulate sounds in words such as syllables, sounds, onsets, and rhymes (McGinty & Justice, 2009). Vocabulary refers to the child’s knowledge of the meaning of words as well as the relations among words (Beattie & Manis, 2014). Storytelling refers to a child’s ability to tell a story and includes the major elements such as characters, settings, problems, consequences, and solutions.

For the past few decades, the term ‘emergent literacy’ has been preferred over previous terminology such as ‘reading readiness’ to refer to the pre-literacy skills that develop prior to formal schooling. The phrase ‘reading readiness’ suggests that children should acquire a set group of skills before they can benefit from formal reading instruction, creating a boundary between “prereading” behaviors and the “real” reading behaviors that children acquire in the educational setting. Essentially, the ‘reading readiness’ approach focused on the skills a child should acquire before they can benefit
from formal instruction in an academic setting. Emergent literacy is now most often used because it indicates that early (or emergent) literacy skills develop on a continuum rather than a firm phenomenon that is initiated at the start of kindergarten (Whitehurst & Lonigan 1998). For a vast majority of children, emergent literacy skills are developed across the toddler and preschool years. According to Whitehurst and Lonigan (1998), emergent literacy can be characterized as a sociocultural process because it is heavily influenced by the child’s social and cultural environments, and it develops often without formal instruction. Emergent literacy also relies on the assumption that the development of reading, writing, and oral language is simultaneous and interdependent (Whitehurst & Lonigan 1998), incorporating a broad range of skills, such as those mentioned above.

### 1.2 Models of Emergent Literacy

Researchers aimed at understanding children’s emergent literacy skills have developed varying models for conceptualizing the skills involved. A 2015 article written by Rohde refers to a four-component model for emergent literacy developed by Mason and Stewart in 1990. This model divides emergent literacy skills into the following four components: 1) literacy concepts and functions, 2) writing composition, 3) letter and word knowledge, and 4) listening comprehension. Literacy concepts and functions refer to the child’s understanding of the behaviors that contribute to reading and writing. This does not include the specific skills needed for reading, but rather general knowledge about the text. For example, it includes the knowledge that print remains static over time. Writing composition refers to the organization of words and sentences, such as knowing that words belong in a certain order to convey meaning through written output. This does
not include letter forms or the act of writing letters. Letter knowledge refers to alphabet knowledge and phonological awareness, such as the relationship between letters and sounds. Listening comprehension focuses on vocabulary and storytelling skills (Mason & Stewart, 1990 as cited by Rohde, 2015). Although this model encompasses literacy concepts as they are interpreted by children, it does not explain how each component interacts with the other (Rohde, 2015).

In contrast, Justice and Pullen (2003) divided emergent literacy into two domains, phonological awareness and written language awareness. Phonological awareness refers to the child’s knowledge of the sound structure of oral language. Phonological awareness includes the ability to identify rhyme patterns as well as phoneme and syllable manipulation (Whitehurst & Lonigan 1998). The other domain, written language awareness, refers to the child’s underlying knowledge of print. Written language includes alphabet knowledge, book handling and print knowledge. Book handling involves understanding the way books are handled and organized such as knowing that the title of the book is on the cover or knowing where the first word on the page is. Print knowledge corresponds with understanding the features of print in books and the environment, such as directionality. According to Justice and Pullen, children’s knowledge in these areas is a result of activities that require adult mediated interactions, such as shared book reading (Justice & Pullen, 2003).

Rohde (2015) also describes a relatively new model that aims to illustrate how the development of emergent literacy skills is a collaborative process of skills and context instead of a sequence of individual components. This model is referred to as the ‘Comprehensive Emergent Literacy Model’ (CELM). Essentially, this model suggests
that although each component of emergent literacy may occur in an individual sequence, each component enhances the development of the other components. The model emphasizes the importance of the child’s environment for the development of early literacy skills. The model is based on Cunningham’s (1993) Whole-to-Part Literacy Assessment which is comprised of three components including word identification, listening comprehension, and silent reading comprehension. Similarly, the CELM model contains three components, which are precursors to the components of Cunningham’s assessment. The first component is print awareness, a precursor to letter identification. According to Cunningham, the second component, phonological awareness is associated with listening comprehension. The third component, oral language, is a precursor to silent reading comprehension. Lastly, the model recognizes a fourth component, writing, as a skill that connects and emphasizes the relationship between the other major components (Rohde, 2015).

Finally, Whitehurst and Lonigan (1998) created the Outside-In, Inside-Out Model. This model describes interdependent domains and represents them as a continuum with contextual knowledge on one side and understanding of letters and sounds at the other. The Outside-In domain refers to information that is meaning-based or external to the printed words which directly supports a child’s understanding of the meaning of print such as vocabulary, conceptual knowledge, and understanding story structure. The Inside-Out domain refers to information that is code-based and internal to the printed word to support the reader’s ability for sound-letter conversion, such as phonological awareness, and alphabetic knowledge. For example, imagine a child attempting to read a sentence, their ability to convert sounds to letters is dependent on their knowledge of
individual letters and sounds, and the connection between them, as well as syntax and cognitive abilities to organize these elements into the structure of a sentence. Children with intact *Inside-Out* and *Outside-In* skills can look at printed words on a page and know that they have meaning and are connected.

Regardless of the model adhered to, emergent literacy skills are important because they predict later literacy success with conventional literacy skills (e.g., word-level reading, spelling, reading comprehension). Because, for this study, there was interest in the potential differential effects of a training program on children’s *Inside-Out* (i.e., code-based skills) and *Outside-In* (i.e., meaning-based skills), Whitehurst and Lonigan’s (1998) *Inside-Out and Outside-In* model drove the current project. Specifically, there was interest in how the different types of emergent literacy skills may be impacted by differing styles of shared book reading and extension activities that support each of the type of skills within each of the domains.

### 1.3 Why are emergent literacy skills important?

Early literacy skills are important to investigate because they are instrumental in preparing young children for the acquisition of reading proficiency, which is important for academic success (Girolametto et al., 2012). Children who successfully acquire early reading skills tend to remain successful in later reading abilities, while children who experience difficulties with early literacy skills tend to continue to experience difficulties with later reading abilities (Robert et al., 2005). For example, a longitudinal study by Lonigan et al. (2000) examined how emergent literacy skills can predict later reading abilities. The authors followed 96 participants from their preschool years through
kindergarten or first-grade. The results indicated the developmental origins of a majority of children’s literacy skills in kindergarten and first grade are found in the preschool years. The emergent literacy skills present during the preschool years, such as phonological awareness and alphabet knowledge, can be predictive of later reading abilities. In contrast, however, emergent literacy skills, such as knowledge of print concepts, were not found to have a significant impact on later reading abilities. Overall, the results of this study indicated developmental continuity between emergent literacy skills and later reading abilities (Lonigan et al., 2000).

According to Spira et al. (2005) there is a significant relationship between the skills children enter school with and their academic performance. Emergent literacy, especially, is considered a crucial component to predicting later academic success. The categories of early literacy skills considered strong predictors include the Outside-In skills of oral language and conceptual knowledge, and the Inside-Out skills of phonological awareness and letter knowledge. The authors of this 2005 study focused on a sample of 146 children from low-income backgrounds to determine if emergent literacy skills and behavioral skills in kindergarten predicted fourth grade outcomes. The results showed that children who demonstrated relative strengths in phonological awareness, oral language, letter-word identification, and behavior in the classroom during kindergarten were more likely to show improvement if they encountered initial reading difficulties during formal reading instruction compared to children with weaker emergent literacy and behavioral skills.

The National Early Literacy Panel (Lonigan & Shanahan, 2009) was formed to conduct research pertaining to emergent literacy development that would contribute to
literacy education and evaluate the role of teachers and parents in supporting children’s literacy and language development. The NELP synthesized various research findings. Eligibility for inclusion in the research synthesis was that studies had to be published in English and contain empirical findings for children up to the age of five. A Total of 303 studies published between the years of 1934 and 2008 were included in the synthesis. Findings from this project indicated that emergent literacy skills are directly linked to eventual success in conventional literacy development. Numerous emergent literacy skills such as alphabet knowledge, print knowledge, listening comprehension, vocabulary, and phonological awareness were found to be predictors of later reading success (Lonigan & Shanahan, 2009).

Following the NELP, more recent research continues to confirm the importance of emergent literacy skills for later reading success. Wellman et al. (2011) conducted a study to determine how early narrative ability predicted literacy abilities in the school-age years. The longitudinal study consisted of participants between the ages of 3 years, 3 months and 6 years, 6 months. The participants were 20 children with speech-sound disorders (SSD), 20 children with SSD and language impairment (LI), and 20 siblings of the children with no history of SSD or LI. Along with test batteries that examined the children’s speech sound skills, the participants were given a story retelling task, in which the story was read aloud to the child and the child was prompted to tell the story back to the examiner. The participants were then asked questions to assess child knowledge of facts and inferencing skills. Post-testing was conducted at the end of the school age years (e.g., 8-12 years of age) to examine reading and written language skills. The results
indicated that performance on story retelling tasks during the children’s younger years was a predictor of literacy skills in the school-age years (Wellman et al., 2011).

Piasta et al. (2018) conducted a longitudinal study over two years examining the emergent literacy skills of 243 children between the ages of 3 years and 5.5 years. This study was conducted to determine the relationship between emergent literacy skills and later word identification and decoding skills. At the beginning of the study participants completed an assessment battery aimed at measuring emergent literacy skills (e.g., narrative skills, print concepts, letter knowledge, phonological awareness, letter-sound knowledge). Two years later, at the end of the study, participants completed an assessment that focused on measuring early word reading skills (e.g., word identification and decoding skills). The results indicated moderate correlations between narrative skills and other emergent literacy skills (e.g., print concepts, letter knowledge, phonological awareness). Additionally, the results indicated that narrative skills and other emergent literacy skills were significantly predictive of the participants’ word identification and decoding abilities (Piasta et al., 2018).

Taken together, these results suggest that children’s emergent literacy skills in preschool and kindergarten are an important determinant of later reading abilities and academic success. Therefore, understanding the development of early literacy skills and ways in which these skills may be supported in the home, which is the focus of the current study, is crucial for supporting developing readers and writers.
1.4 Parent Involvement in the Facilitation of Emergent Literacy Skills

The home literacy environment is comprised of numerous factors that include reading habits of the parent, shared reading habits among the family, as well as other factors that include frequency of library visits and the amount of books in the household (Niklas et al., 2020). Research has shown that the home literacy environment is a significant source of experiences that are known to impact the development of children’s oral and written language skills. Vygotsky’s (1978) theory suggests that social interaction is a significant component for child development, particularly with language and communicative skills; children acquire knowledge by observing and interacting with others. Normally, the primary interaction partners are parents or caregivers. Therefore, parents and caregivers are pertinent for cultivating development using techniques such as modeling and scaffolding by organizing tasks according to the child’s needs (Edwards, 2014). Because parents are most often the primary communication partner for children in their preschool years, it is important to highlight how interactions between parents and their children may impact their child’s emergent literacy skills.

Several investigations have aimed to understand the relationship between parent interactions, home literacy environments and children’s emergent literacy skills (Scarborough et al., 2001; Roberts et al., 2005;). In addition to investigating the relationship or impact of the frequency of home literacy practices with later achievement, investigators also have been interested in whether parents spend more time focusing on Inside-Out vs. Outside-In skills during literacy activities.

A study conducted by Payne et al. (1994) examined the home literacy environment and language skills of 323 four-year old children attending a Head Start
program. The factors measured included frequency of shared book reading, duration of
shared book reading, amount of picture books in the home, how often the child requests
to engage in book reading with their mother, child solitary play with books, and the
mother’s reading habits. The factors were measured using a questionnaire completed by
the parent and the child’s language skills were assessed using two standardized tests. The
results indicated a strong relationship between the home literacy environment and child
language abilities.

Scarborough et al. (1991) conducted a longitudinal study involving 56 preschool
children and their 112 biological parents. Parents were asked about the frequencies of
adult reading, shared book reading between the parent and child, and the child’s solitary
reading. The children were designated to three groups. One group was comprised of 22
poor readers with a family history of reading difficulty. A second group was 12 normal
achieving readers with a family history of reading difficulty, and the final group of 22
normal achieving readers had no family history of reading difficulty. The parental
responses were compared among three groups based on parents’ reading skill and the
child’s second grade reading achievements. Parental reading skills were measured based
on their performance on test batteries examining reading abilities and an adult
intelligence scale. The results indicated the children who were poorer readers in second
grade experienced less reading related activities, while children who became better
readers had more frequent reading related activities in the home during the preschool
years.

Anderson (1995) conducted a study to investigate the relationship between
parental perceptions of literacy learning and their children’s early literacy knowledge, as
well as their perceptions of learning to read and write. The participants consisted of 16 three- and four-year old children and a parent. The results indicated a significant relationship between parental perception of literacy and the child’s perception of literacy. However, there was a relatively weak relationship between parental perception of literacy learning and the child’s emergent literacy skills (Anderson, 1995). Results from another 2002 study by Sénéchal and LeFevre indicated that middle-class and upper middle-class English speaking parents reported a higher frequency of home literacy experiences, such as shared book reading, compared to parents from low-socioeconomic status backgrounds. Many of these parents reported that they started reading books with their children at the age of 9 months. They also reported that reading occurred often. Their children had between 61 and 80 books in the home, and the children made visits to the library. The parents also stated that their children often initiated shared book reading. Lastly, parents stated that they taught their children how to read and write.

A 1985 study conducted by Wells found that approximately 5% of daily speech produced by two-year-old children occurred during story time. Another study conducted by Ninio and Bruner (1978) found that maternal labeling of objects most often occurred during shared book reading, which reveals how shared book reading facilitates development of vocabulary. Other aspects of verbal interactions between a parent and child have also been found to impact emergent literacy skills. For example, conversation between parents and children during meals and other interactions, such as narrative and explanatory talk are contributors to the development of language skills (Wells, 1985).

Roberts et al. (2005) observed the home literacy practices of African American mothers and their children who were between the ages of 18 months and five years. The
observations were live but were also videotaped for further analysis. Four measures of home literacy were studied including the frequency of shared book reading, reading strategies of the mother, child enjoyment, and maternal sensitivity. Frequency of shared book reading refers to how often a parent reads to their child. The mother’s reading strategies refers to the types of interactions that occur between the parent and child during shared book reading. These strategies would include the parent asking the child questions pertaining to the book, adding information about the book, and placing emphasis on print concepts. Child enjoyment refers to the child’s perception of shared book reading. Essentially, the idea is if the child enjoys the interactions that shared book reading facilitates then they will be more likely to engage in literacy activities. Maternal sensitivity is a qualitative rating of the parent-child interaction, such as the parent encouraging and motivating the child to participate in literacy activities. The authors analyzed the results and created an overall model of the global home environment referred to as the HOME total, which included all of home literacy practices mentioned above. The results largely indicated that the quality of the HOME environment was a significant predictor of receptive vocabulary (i.e., number of words a child understands) at three years of age and emergent literacy skills at four years of age and kindergarten entry. Specifically, children who were in homes with parental emotional and verbal responsiveness, behavioral acceptance, organization of the environment, in-home language and academic stimulations, and maternal involvement had better emergent literacy skills.

There are two broad styles of shared book reading with children that have received attention in the literature. Research has suggested that Outside-In skills are
influenced by dialogic reading, a style of shared book reading in which the child becomes the primary story-teller, while the parent is the listener and asking the child questions about the story, adding information and prompting the child in an effort to improve the complexity of the child’s story telling abilities. In contrast, print referencing is a strategy used during shared book reading that refers to the use of both verbal (e.g., questioning, commenting, and making requests about print) and nonverbal cues (e.g., pointing to or tracking print during reading) in an effort to encourage children’s interaction with and attention to print, impacting Inside-Out skills (Whitehurst & Lonigan, 1998; Justice & Ezell, 2004; Norling, 2014).

Sénéchal et al. (1998) proposed that children are exposed to formal and informal literacy activities in the home environment. The authors defined informal activities as consistent with those which support Outside-In (or meaning-based) skills that have the primary purpose of understanding the message within the print, not the print itself. For example, when a parent is reading a story to their child they focus on the story and illustrations within the book. The parent might expand on the meaning and the child might ask questions about it. Formal activities are defined as those that support Inside-Out (or code-based) skills with an actual focus on the print. For example, during shared book reading the parent may talk about the letters and the sounds of those letters, such as with a print referencing style.

Sénéchal et al. (1998) conducted a study to examine how exposure to storybooks and parent reported teaching of reading and writing skills are associated with Outside-In skills (e.g., vocabulary, listening comprehension) and Inside-Out skills (e.g., print concepts, letter knowledge, phonological awareness). The participants consisted of 110
children in kindergarten and 47 children in first-grade. The results indicated that exposure to story books (e.g., frequency of storybook reading, frequency of child reading requests, frequency of visits to the library, number of books available in the home, age of the child when shared book reading started) was related to the Outside-In skills of the child participants. Contrastively, parent teaching such as parental attempts to communicate knowledge about letter-sound conversions and sounds was associated with Inside-Out skills. Essentially, increased exposure to storybooks is related to Outside-In skills, while more parental teaching is related to increased Inside-Out skills. Therefore, storybook exposure enhances Outside-In skills, but further parent teaching impacts Inside-Out skills.

Similarly, Hindman et al. (2008) conducted a longitudinal study in which the literacy development of 130 preschool age children between the ages of 2.81 and 5.22 years until second grade were examined. The participants were videotaped during shared book reading with a parent. Children were also observed via video during instructional book reading in 33 preschool classrooms. The results indicated both parents and teachers placed more emphasis on Outside-In skills (e.g., listening comprehension, vocabulary, oral language) rather than Inside-Out skills (e.g., phonological awareness, letter knowledge).

Taken together, these studies indicate that parent involvement, such as frequency of shared-book reading and parent sensitivity during literacy activities, has a significant impact on the development of children’s emergent and later literacy skills. Importantly, different types of reading styles have been found to facilitate differing emergent literacy skills, all of which are important with later academic success (Payne et al., 1994;
Sénéchal et al., 1998; Roberts et al., 2005; Scarborough et al. 1991; Sénéchal & Lavre, 2002; Wells, 1985) and parents most often spend time emphasizing listening comprehension and vocabulary skills when reading to their children rather than phonological awareness and letter knowledge, which are important for the development of Inside-Out skills. These findings not only indicate the need to continue to focus on providing training opportunities for parents to learn how to facilitate their children’s emergent literacy skills through shared book reading, but they also highlight the importance of providing training strategies for print referencing, given that parents do not readily use this style of reading.

1.5 Impact of Socioeconomic Status on Emergent Literacy Skills

According to Froiland et al., (2014), research has indicated a correlation between family variables and emergent literacy skills. Evidence has shown that significant deficits in early literacy skills are associated with familial characteristics such as socioeconomic status (SES). SES refers to social standing of an individual or group that is usually measured by education, income, and occupation. Studies have indicated that children from lower SES homes have fewer books available to them and engage in shared book reading with their parent or caregiver infrequently as compared to children in middle or upper SES homes.

A study by Bracken and Fischel (2008) investigated the reading behaviors of 233 children from low-income households who attended Head Start programs. The parents completed a survey about their home literacy practices (e.g., child reading, parent perception of literacy, and parent-child literacy interactions), as well as information about
their education level. The researchers also assessed the children’s receptive vocabulary, print concepts, alphabet knowledge, and other general early literacy skills. The focus of the study was to determine the relationship between family reading behaviors, and how those behaviors contribute to the development of emergent literacy skills. The results indicated that parent-education level was a significant predictor of the child’s receptive vocabulary, understanding of print concepts, and other emergent literacy skills. They also found a correlation between parental education and reading behaviors. Parents who completed higher levels of education had children with the greatest interest in reading and higher level of parent-child interactions during literacy activities.

Similarly, Froiland et al. (2014) examined the relationship between socioeconomic well-being and the home literacy environment while assessing emergent literacy outcomes among 551 students from Head Start programs. The participants and their parents were from primarily urban neighborhoods and the majority of the families were below the federal poverty line. The children were assessed based on letter-word identification, print concepts (e.g., assessing whether the children know to read left to right), and receptive vocabulary. The parents also completed a questionnaire about their home literacy practices and education level. The results indicated a positive correlation between SES status and the home literacy environment, as well as a positive correlation between SES status and emergent literacy skills. These results are consistent with earlier studies (Leventhal & Brooks, 2000; Dupere et al., 2010; Vaden-Kierman et al., 2010) and more recent studies indicating that children from higher SES homes tend to have better emergent literacy skills (e.g., Caroll et al., 2019; Esmaeeli et al., 2019).
Luo et al. (2020) investigated children’s access to books for 153 four-year old children from low-income and minority families. Mothers of the participants reported the number of books in their homes, as well as the variety of books in the home (e.g., concepts books pertaining to letters, numbers and shapes, and narrative books pertaining to cultural beliefs and relationships). They also examined the mother-child interactions during shared book reading via recorded video. These researchers found that a majority of the children had more than 10 books in their home with an average of 32 books. However, this average number was lower than the average for children in middle-income homes found by Classens et al. (2009) who collected a nationally representative sample across a variety of SES backgrounds and found that the average number of books in the home was 65.

Because children from low-SES homes may have limited access to literacy materials and thus fewer books in their homes, and because book giveaway programs are a common philanthropic effort, De Bondt et al. (2020) conducted a meta-analysis consisting of 44 different studies that have examined the effects of book giveaway programs on encouraging parents and caregivers to engage in literacy activities with their children. The meta-analysis combined studies that focused on three major book giveaway programs (e.g., Bookstart, Reach Out and Read, Imagination Library). The results indicated that book giveaway programs do indeed promote home literacy practices, which facilitates more interest in reading, correlating with children’s performance on literacy skills measured before and during the early years of school.

From these studies, we know that children from a low SES background are at a greater disadvantage for development of early literacy skills due to limited access to
literacy materials which impacts later literacy success and academic performance (Bracken & Fischel, 2008; Froiland et al., 2014; Luo et al., 2020; De Bondt et al., 2020). This may be due to the limited access to books compared to their non-financially disadvantaged peers. Based on the work of De Bondt et al. (2020), providing children with books and training parents to facilitate emergent literacy skills may encourage shared book reading in the home and enhance the child’s interest and facilitate engagement in shared reading experiences. The current study aimed to measure a change in literacy and language skills over time, but also provide literacy materials to children and their parents to encourage shared book reading and pique the interest of children in books, in order to positively impact later reading and academic success.

1.6 Effectiveness of Parent Training on Children’s Emergent Literacy Skills

Given the well-established findings that home literacy practices impact children’s emergent literacy skills, as well as later reading abilities and that children from lower SES homes tend to infrequently participate in literacy activities and have limited access to literacy materials, several investigators have sought to determine the effectiveness of training parents to facilitate emergent literacy skills. Some researchers have focused on the effect of parent training for supporting children’s Outside-In skills such as vocabulary, conceptual knowledge, and understanding story structure (Lonigan & Whitehurst, 1998; Crain-Thoreson & Dale, 1999; Wing-Yin Chow & McBride-Chang, 2003; Aram et al., 2013; Noble et a., 2020) whereas others have examined Inside-Out skills such as phonological awareness and alphabet knowledge (Ezell et al., 2000; Justice
& Ezell, 2000; Reese et al., 2010), and others have investigated both types of skills (Reese et al., 2010; Landry et al., 2012).

Landry et al. (2012) studied the interaction between mothers and their child during shared book reading interactions prior to and after their participation in a parenting intervention program referred to as *Play and Learning Strategies* (PALS), which focused on increasing parent response behaviors by prompting the parents to respond affectionately and quickly to their children during literacy activities in ways that would sustain the child’s attention. Parents were encouraged to provide rich language stimulation and scaffolding. Mothers and their children were randomly placed into four groups. They were observed during shared book reading activities during the toddler and preschool years. The examiners analyzed the results based on the affective and cognitive-linguistic support of the mother, and the child’s response to their mother’s requests and initiations. The results indicated change in mother-child interactions, improved parental book reading behaviors, and child response to literacy activities. Improved parental book reading behaviors included decreasing the time the mothers spent on just reading the text, while making the shared book reading more interactive and talking about what is happening in the book, as well as making comments pertaining to the book. Improvements in child response to literacy activities refers to child’s willingness to cooperate and collaborate with the mother during literacy activities, such as responding to the mother’s request during shared book reading, as well as maintaining interest in the books. The researchers also found that facilitating maternal responses generalized to other situations that were not directly targeted in the intervention, such as children
making requests and asking questions pertaining to the book, as well as the use of more complex language during shared book reading activities (Landry et al., 2012).

Other investigators have specifically examined how parental training impacts certain types of literacy skills. Recall that *Outside-In* skills refer to information that is meaning-based or external to the printed words which directly supports a child’s understanding of the meaning of print such as vocabulary, conceptual knowledge, and understanding story structure. Contrastively, *Inside-Out* skills refers to information that is code-based and internal to the printed word to support the reader’s ability for sound-letter conversion, such as phonological awareness, and alphabetic knowledge (Whitehurst & Lonigan, 1998; Storch & Whitehurst, 2001).

### 1.6.1 Outside-In Skills

Lonigan and Whitehurst (1998) conducted a study to determine the impact of dialogic reading during shared book reading at home and at school on the vocabulary skills of 3- and 4- year old children. In their study parents were trained via videotape to engage in dialogic reading with the children based on a set list of guidelines and a list of goals accompanied by assignments to accomplish those goals. Parents watched the video at the childcare center their child attended. The video consisted of two parts provided three weeks apart. The goals addressed included labeling functions and nouns, turn taking, and story and picture structures. The parents were also provided with procedures for how to implement activities during literacy activities. The activities assigned to address these goals included asking *wh*- questions (e.g., who, what, when, where), positive reinforcement, asking open-ended questions, and expanding on the child’s statements. They were also encouraged to ask the children questions about the readings.
Following the parents’ implementation of dialogic reading over the course of six weeks, the children’s expressive vocabulary skills significantly improved as indicated by standardized measures and spontaneous speech samples.

A 1999 study conducted by Crain-Thoreson and Dale instructed parents, as well as educators, in dialogic reading techniques. The participants were parents and their 32 children between the ages of 39 and 66 months who had language delays. Specifically, the parents were taught how to effectively engage in dialogic reading with their children. Strategies provided to the parents included asking questions, slowing down, follow-up questions after child answers, repeating child responses, helping the child as needed, offering encouragement, following the child’s interests, and have fun. The researchers compared the effects of the instruction on the children’s language, specifically the use and understanding of vocabulary. Standardized tests of vocabulary were administered to the children and shared book reading was videotaped before and after the eight-week intervention. The parents indicated changes in their reading styles consistent with instructions. The results also indicated that the children produced longer utterances, produced a larger variety of words, and were interested in participating in more shared book reading activities compared to pre-intervention abilities. Although participants in the control group did not have one-on-one dialogic reading engagement, they did participate in group story-time activities implementing dialogic reading and showed gains comparable to those indicated in the intervention groups. However, there was no significant changes in the children’s standardized vocabulary scores.

Wing-Yin Chow & McBride-Chang (2003) examined the impact of training parents to engage in dialogic reading with 86 Chinese children in kindergarten. The
children were pretested using a comprehensive test battery assessing character
identification, visual and auditory discrimination, vocabulary, and auditory
comprehension. The children were then randomly assigned to three groups including:
dialogic reading, normal shared book reading, and a control. For the dialogic reading
group, eight books were provided to families along with hints for prompt questions for
parents to ask the children during reading. For the normal shared book reading group,
eight books were provided but no hints. For the control group, no books were provided,
and parents were expected to rely on their regular literacy habits. Intervention was
provided to parents and their children over an eight-week period. The children were then
post-tested using the same test battery as at pre-test. The results indicated that dialogic
reading techniques provided the best results for improvement of language abilities and
development of literacy skills such as vocabulary and comprehension.

More recently, Aram et al. (2013) studied the efficacy of parent intervention
designed to teach parents to reference story plots and themes while reading, also
encouraging their child to do the same by expanding their vocabulary and enriching their
story sequencing and structure abilities, as well as enriching their ability to relate the
stories to life experiences. The study included 58 families from a low-socioeconomic
status background. The parents were provided with four books (one new book each week)
and instructed to read the books with their preschool children four times per week. The
parents were placed in two groups, intervention and control. The control group received
no instructions while the intervention group parents were given guidance on how to read
the books interactively with their child. The intervention group was instructed to initially
focus on the plot of the book (e.g., vocabulary, sequencing, story structure) and then to
focus on connecting the story to the child’s life. The results indicated that parents in the intervention group referred to the book’s plot and socio-cognitive themes (e.g., how the book relates to the child’s life) more often than the control group. Additionally, the children in the intervention group referred to the story plot and referenced the socio-cognitive themes (i.e., relating the story to their life experiences) more often than their peers in the control group.

Noble et al. (2020) conducted a study to determine how shared book reading instruction for parents to implement with their children, across socioeconomic statuses, impacts a variety of language skills. Criteria for eligible participants included English speaking, monolingual children between the ages of 2 years, 6 months and 3 years. They were randomly assigned to three conditions: pause reading, dialogic reading, and the control condition of normal shared reading. Like dialogic reading, pause reading involves parents being more interactive with their children during literacy activities. Pause reading refers to the act of pausing during literacy activities and asking open-ended questions about the material (Colmar, 2014). This includes being responsive, asking open-ended questions, as well as encouraging the child to ask questions. The training program occurred over a six-week period. Videos were provided to introduce the intervention. The videos consisted of individuals modeling the target reading behaviors and advice about how to make these behaviors a part of daily life. The control group only received videos about how to make reading a part of daily life. The caregivers were given 20 books to read to the children over the six-week period. They were also provided with an audio recorder and a reading diary to collect information about their reading experiences. The dialogic reading intervention group was provided with two techniques, PEER and
CROWD. PEER refers to prompting the child to say something about the book, evaluating their response, expanding on the response, and repeating the prompt. This technique was followed by CROWD, which refers to how to provide prompts including completion, recall, open-ended questions, wh-questions, and distancing questions. The pause reading intervention group was trained to use the PROB technique, which refers to pauses, response, open-ended prompts, and boosts (i.e., rephrasing or adding to what the child said). The results indicated that the parent trainings affected the reading behaviors of caregivers, however, the children’s language abilities were not enhanced (Noble et al., 2020).

Finally, Dowdall et al. (2020) conducted a meta-analysis to evaluate the impact of dialogic reading interventions for caregivers on literacy and language development. The population studied was children 12 to 72 months of age. The meta-analysis included studies that focused on interventions designed to promote literacy techniques for effective shared book reading strategies (e.g., dialogic reading). The results indicated that parent literacy intervention programs had a small impact on the development of expressive and receptive vocabulary in the children. The researchers also found that dosage was an important factor. When caregivers participated in more intensive intervention the children benefited more in expressive and receptive vocabulary abilities. Lastly, they found that group intervention was more effective.

1.6.2 Inside-Out Skills

Ezell et al. (2000) examined the effectiveness of a parent-child shared book reading program designed to improve the emergent literacy skills of preschoolers with communication impairments. Four parents and their children completed the program over
a course of five weeks. The program included group training as well as individualized parent training. Group training targeted strategies for print referencing, such as verbally commenting on the print (e.g., “this sign says hot”) and nonverbal print referencing (e.g., tracking the print). They also provided strategies for providing praise and asking open-ended questions (e.g., “what’s going to happen next?”). Individual training focused on practicing the strategies and providing parents with feedback for the use of the strategies. Although the training mainly focused on print referencing, *Outside-In* skills also were targeted but they only measured *Inside-Out* skills, knowledge of print concepts and the alphabet. To assess print concepts, the children were asked questions during shared book reading, such as “show me the front of the book.” To assess alphabet knowledge, the children were asked to either point to a certain letter or asked to say what letter was shown to them. The results indicated a positive impact on the children’s print concepts, but there was no significant impact on alphabet knowledge. Also, parents perceived the program as beneficial for not only the children, but themselves as well. Therefore, parent training not only positively impacts development of emergent literacy skills, but also parent perception of literacy activities.

Similarly, Justice and Ezell (2000) conducted research focusing on the efficacy of a home-based reading intervention design to increase parental use of print-referencing and facilitate the development of their children’s emergent literacy skills, specifically print awareness. The participants consisted of 28 parents and their four-year old children. Each participant was assigned to an intervention or control group. Parent reading behaviors and child early literacy skills were measured before and after the start of the four-week intervention. Parents were trained to use print referencing, such as verbal cues
(e.g., commenting, questioning, and requesting about print) and nonverbal cues (e.g., pointing and tracking the print while reading), by the researcher via presentation of a short video followed by a review using a book provided by the researchers. The parents were then asked to conduct a practice session using the same book. The researchers provided feedback and the parents were asked to use these same behaviors in their home. The parents were provided with tape recorders to record their in home practices. After the four-week period, post-testing was conducted to assess the children’s emergent literacy skills and parents completed a questionnaire. The results indicated that the parents increased their use of both verbal and nonverbal references to print, and the children showed improved print-concept abilities, alphabet knowledge, and word-segmentation abilities both over time and compared to the control group (Justice & Ezell, 2000).

Finally, Reese et al. (2010) conducted a review of various parent training studies in three contexts which included shared book reading, parent-child conversations, and parent-child writing. Overall, the results of the studies reviewed indicated that language and emergent literacy skills are effectively improved in all three contexts. For example, interventions aimed at encouraging children to talk about pictures in books via parent training impacted vocabulary skills. Intervention aimed at training parents to encourage children to improve their storytelling abilities improved narrative skills, and training which encouraged parents to focus on print improved children’s print knowledge and writing skills.

These results along with numerous other studies (Naparalla, 2003; Breit-Smith et al., 2009; Neumann et al., 2013) suggest that training parents to use certain strategies while interacting with their child during literacy activities facilitates the development of
certain emergent literacy skills. Also, the results are not dictated by the context the training occurs in, but rather show that parents are a valuable resource for the development of emergent literacy skills across a variety of interactive contexts (Reese et al., 2010). There, however, remains a critical gap in the literature. Given increases in sophisticated technology, families’ increased use of technology to communicate, and the importance of such a training to be delivered in the home, it is important to understand whether providing a completely remote training to parents with strategies for facilitating the development of emergent literacy skills has an impact. Further, the use of a telecoaching approach allows for training in a format that is flexible, less time consuming for busy parents, and inexpensive.

1.7 Telecoaching: What has been done to support parents remotely?

Although some previous investigations have used training videos to support parents’ use of strategies for facilitating emergent literacy skills (e.g., Arnold et al., 1994), few investigations have delivered such trainings fully remote, and those which have focused on children with language or intellectual impairments or they did not directly measure children’s emergent literacy outcomes (e.g., Akemoglu et al., 2021). To my knowledge, no investigation to date has examined the impact of parent telecoaching on preschoolers’ emergent literacy skills. However, the impact of telecoaching on other communication and developmental skills has been investigated. For example, Wainer and Ingersoll (2015) used a single-subject multiple-baseline design to examined the impact of a hybrid telehealth program for parents that combined self-directed internet-based instruction with remote training on the communication skills of five children between the
ages of two and six with autism spectrum disorder (ASD). The self-directed portion of the program consisted of training focused on increasing their children’s spontaneous imitation skills. The remote portion of the program included three 30-minute virtual coaching sessions. During that time period the coaches answered questions, engaged in problem solving, provided feedback to parents, and engaged in more practice. The parents were also given written feedback after the sessions. Parents completed the program using computers in their homes. The results indicated that participation in the telehealth program improved the parents’ ability to apply the intervention strategies and the children’s spontaneous imitation abilities improved as well.

Comer et al. (2017) examined the effect of video teleconferencing to virtually deliver strategies to parents on managing their children’s challenging behaviors. Forty children between the ages of three and five with disruptive behavior disorder and their caregivers were participants in the randomized control trial that compared internet delivered parent-child interaction therapy (I-PCIT) to clinic-based therapy (PCIT). Assessments were administered before, during, and after treatment, as well as six months after the conclusion of treatment to determine child diagnostic outcomes (e.g., severity, impairment, functioning level) and parent satisfaction with treatment. More children showed improvement from I-PCIT compared to PCIT. Also, more children continued to show improvement six-months after intervention compared to PCIT. Therefore, for this study, remote coaching was more effective than traditional training. (Comer et al., 2017).

Particularly relevant to the current study, Arnold et al. (1994) expanded on a 1988 study conducted by Whitehurst and colleagues. In the study conducted by Whitehurst et al. (1988), mothers were taught to use dialogic reading with their preschool age children.
The results of the program indicated a significant impact on the children’s language development, such as the understanding and use of vocabulary. However, the cost of the training in a one-on-one format limited interest in the program, therefore, limiting use of the techniques (Whitehurst et al., 1988). Arnold et al. (1994) expanded on the previous study by adapting the program to an inexpensive videotape format for training parents to use these techniques for reading activities. Parents were randomly assigned to three groups which included no training, traditional training, and training via videotape. The results confirmed Whitehurst et al. (1988) findings that dialogic reading has a substantial impact on child language skills, specifically vocabulary, even when delivered electronically. The results of this study not only indicated that the same results can be provided in a more cost-effective and standardized manner, via video tape, but they also indicated that video training was more effective than traditional training (Arnold et al., 1994).

Most recently, using a single-subject research design, Akemoglu and colleagues (2021) conducted a study focused on training and coaching parents to use naturalistic communication strategies during shared book reading with their children. The parents were trained virtually using a telepractice technology such as Zoom. The researchers’ primary focus was on examining the parent participants’ fidelity, the parents’ use of books, and outcomes of the child participants’ language and communication. The participants included parents and their children between the ages of two and three and who had disability. Like the current study, the program lasted for eight weeks. Results indicated that parents used strategies more frequently and accurately as the program
progressed and the coaching piece was critical for parent fidelity to the program. Additionally, the children initiated more communicative attempts.

As shown by Arnold et al. (1994) as well as Whitehurst et al. (1988), parent training can be provided in a remote format, while continuing to improve language and literacy skills of preschool children. Remote parent coaching also may be a viable option for supporting parents’ use of language facilitating strategies that

The current study builds upon previous work by remotely training parents to support 4-year-old children’s emergent-literacy skills in a text-based format. This is different from the study conducted by Akemoglu and colleagues several ways. First, the current study delivered the training in an asynchronous text-based format rather than live video conferencing as was done in Akemoglu and colleagues’ study. Second, while parents were encouraged generically to use the strategies in the current study, specific coaching and feedback were not provided. Lastly, Akemoglu’s team did not directly measure the children’s Inside-Out and Outside-In emergent literacy skills and the children in their project were younger.

1.8 Purpose of the Study

There is substantial evidence indicating that emergent literacy skills have a significant impact on language development and later literacy and academic success. Additionally, it is well established that the home literacy environment is the primary context for facilitating children’s emergent literacy skills and that both Inside-Out and Outside-In skills can be effectively increased when parents are trained to facilitate these skills (Arnold et al., 1994; Whitehurst et. al, 1988; Landry et al., 2011). Moreover,
studies have shown that children from low SES homes do not participate in literacy activities as frequently as others. This is due to a lack of accessibility to books and engagement in shared book reading with their parents, which negatively impacts development of emergent literacy skills (Froiland et. al, 2014; Bracken & Fischel, 2008; Feitelson & Goldstein, 1986; Teale, 1986), but book give away programs facilitate literacy activities in the home and enhance interest in reading (De Bondt et al., 2020). Thus, the primary purpose of the current study was to examine how remote parent training for facilitating Inside-Out and Outside-In emergent literacy skills impacts the emergent literacy skills of four-year-old children. This study was unique because although previous investigations have found positive effects of remote parent training on other communication and developmental skills, no studies have examined the impact of a fully remote program on children’s emergent literacy skills. My primary research question was: What is the effect of an 8-week remote parent training program on the emergent literacy skills of four-year-old children? Secondarily, I was interested in exploring the data to determine whether there were preliminary trends to support a potential differential effect of training parents to use Inside-Out vs. Outside-In techniques on the various emergent literacy skills measured.

It was hypothesized based on previous research (e.g., Arnold et al., 1994; Wainer & Ingersoll, 2015; Comer et al., 2017), that the remote training program would facilitate the development of emergent literacy skills in the child participants. It also was hypothesized that there would be trends noted regarding the differential effects of the two types of strategies trained increases in children’s Inside-Out skills such as print knowledge, phonological awareness, and alphabet knowledge were expected for parents
who were trained to use code-based strategies (e.g., print referencing, tracking print), but not for parents who were trained to use meaning-based strategies (e.g., asking open-ended questions, inferencing) Rather, children of parents who were trained to use the meaning-based strategies were expected to increase their *Outside-In* skills such as vocabulary knowledge and understanding of story structure.
CHAPTER III

METHOD

2.1 Participants

Parent-child participants were recruited via social media, flyer drop-offs to area schools, and friends/family, in a southeastern U.S. state. To be eligible to participate the children had to meet specific criteria which included: being a 4-year-old; having language abilities within typical limits (SS > 86) as determined by the Quick Interactive Language Screener (QUILS; Golinkoff et al., 2017) as described below; not have any parent-reported developmental or medical concerns that could impact speech and language abilities, and speak English as a first language. Parents were required to be 19 years of age or older, could not be an educator or speech-language pathologist, and must have internet access, a touchscreen device available (or could confirm the child could properly operate a mouse for use with a laptop or desktop device), and be willing to participate in the 8-week training program. Forty-three parents responded to recruiting efforts to indicate a desire to learn more information about the study and/or participate. Of those 43, 11 were scheduled for pre-/post-testing, but 3 never completed the program or post-testing, leaving a total of 8 parent-child dyads who participated in pre-testing, completed the 8-week program, and completed post-testing. The low number of participants who completed the program are consistent with other recent investigations of this type (e.g., Akemoglu et al., 2021). The child participants in the current study obtained an average SS of 110.375 on the QUILS with a range of 97 to 123. The average age of child participants at the start of the study was 51 months (4 years, 3 months) Additionally, 62.5% (5) of child participants were white, 12.5% (1) were African American, 12.5% (1)
Hispanic, and 12.5% (1) multi-racial. Additionally, five child participants were female, while the remaining three were male. The average age of parent participants was 37.6 years. Five parents reported to have earned a bachelor’s degree, 1 a master’s degree, and 2 doctoral degrees. Lastly, all participants spoke primarily English in the home.

2.2 Telecoaching Program

The parent training program (and time) served as the independent variable(s) in this investigation. Participants were randomly placed in one of the two training conditions. Five of the parent-child dyads were assigned to the Inside-Out (i.e., code-based) group and three were assigned to the Outside-In (i.e., meaning-based) group (Whitehurst & Lonigan, 1998). All participants were screened for language abilities prior to enrolling in the program and emergent literacy skills were assessed before and after the training. The training was delivered to mothers remotely in the form of video modeling and text messaging via the WhatsApp (https://www.whatsapp.com/). This application was selected for correspondence with the families given its built-in encryption security.

For the Inside-Out skills, parents were trained to facilitate their child’s print knowledge, phonological awareness, and alphabet knowledge and for the Outside-In skills, they learned how to implement strategies for increasing their child’s vocabulary and story grammar (i.e., narrative or storytelling abilities). All strategies were provided for use in the context of a shared reading experience with some extension activities. The training was delivered across 8 weeks. Table 1 outlines the materials provided each week, the emergent literacy skills targeted, and a description and name of strategies modeled. Books were selected specifically for their appropriateness for use with each strategy and
were intentionally selected to include diverse characters and appeal to families from diverse backgrounds. Appendix A provides sample transcripts for how videos and text messages were presented throughout each week. Each correspondence with the families followed a generally similar format. Specifically, on Monday of each week, the strategy was introduced and it was stated why it was important. Then, the trainer stated which book should be used and modeled the use of the strategy and then reminded the parent to try the strategy several times that week. The Monday videos were approximately 2-4 minutes long. On Wednesdays, the video served as a reminder for the parents to continue the use of that week’s strategy and the strategy was briefly modeled again or light variations to the strategies were provided and modeled. The Wednesday videos were approximately 1-2 minutes long. On Fridays no video was provided, but the participants received reminder messages via WhatsApp about continuing implementation of the strategies in daily life and book reading over the weekend. When modeling, a loose script was followed to promote a natural and personal video presence. Because each group of parent-child dyads received instructions for implementing strategies specifically to facilitate either Inside-Out skills or Outside-In Skills, each group served as a control for the other group.

**Fidelity.** Although not a central focus of this project, fidelity was measured to understand parents’ cooperation with using the strategies by asking the parent participants to complete weekly journal logs (See Appendix B for an example; actual logs were in google form format). For each week the parents were asked to provide the number of times each strategy was used, the number of times they read to the child each day, and the number of times they read the book provided. They were also asked to
provide feedback by rating how much they liked the strategies, difficulty of the strategies, and the helpfulness of the instructional videos provided. Parents also were asked to periodically send videos of themselves and their child while using the strategies.

Fidelity results indicated the use of shared reading strategies by parents ranged from 6 to 45 times while reading a book for an average of 10 minutes. Additionally, parents were asked various questions to rate their perception of the program (e.g., How helpful were the videos from this week? (1- not helpful to 7-most helpful)). On average, parents reported their perception of the training program as 6 or more on a scale of 1 to 7.

2.3 Measures

To determine eligibility for participation, the QUILS, a standardized child language screening tool, was administered prior to the participants’ enrollment in either of the training conditions. The Assessment of Language and Literacy (ALL; Lombardino et al., 2005) served as the pre- and post-assessment for eligible child participants. All assessments were administered remotely via Zoom. The QUILS was designed to be administered virtually and the ALL was adapted to be administered in a virtual format. The QUILS was always administered prior to the ALL. Administration of the ALL tasks were counterbalanced across participants. Raw scores from the ALL were used to determine the effect of the program on the children’s emergent literacy skills. These measures are described below.

2.3.1 Quick Interactive Language Screener

The purpose of the Quick Interactive Language Screen (QUILS; Golinkoff et al., 2017) was to screen young children’s vocabulary knowledge, syntax knowledge, and the
process of language learning. The examiner provided a brief introduction (e.g., “I am going to show you some pictures on the screen, there will be a man talking, and he will ask you to answer questions about the pictures. When he asks you questions I want you to click on the answer you think is correct. Some of these are very hard, so if you don’t know it is ok to guess.”) followed by instructions and a prerecorded narrator providing prompts. Three practice items were provided immediately after the instructions were given and before administration of the actual screener items to ensure the participants understood the tasks and to familiarize them with the testing format. All skills were measured receptively, and the child was given remote access to make selections by touching their screen or using a mouse. The screener consisted of a total of 48 items, with 16 items for each of the three areas measured.

For the vocabulary subtest, the child’s existing knowledge of nouns, verbs, prepositions, and conjunctions was measured. The child was shown pictures and prompted to find something or asked a question. The child chose his/her answer from a series of pictures and animated scenes. Examples of prompts that were provided to the child include “find the sailor,” “who is returning,” “Show me the doll is above the present,” and “who ate the food before the cat jumped on the table?”

The syntax subtest screened the child’s existing knowledge of Wh-questions, past tense, prepositional phrases, and embedded clauses. Again, the child was provided with a series of pictures and prompts such as: “what is falling on the little girl?” “where was the hat?” “find the dog behind a black table,” and “where did Grandma tell Jack to go?” The children had to provide their response by selecting the picture they believed was correct.
The language processing subtest screened the child’s ability to learn novel nouns, adjectives, verbs, and conversion of active to passive voice. The focus of the processing subtest was to screen how children acquire and apply new knowledge. The child was provided with a short video or picture that contained an object or action described by a non-word. The narrator asked the child to choose a picture that provided another illustration of the object or action. Examples of prompts provided included “find the boy is “meeging;” “which one got lummed;” and “show me the blue fep.”

According to the test manual, an overall cut-off score of 86 should be used to determine whether the child should be referred for further language testing. For the purpose of this study, child participants whose standard scores were 86 or above were determined to have language skills within normal limits and were eligible to participate. Because the QUILS is a screener that is administered and scored automatically, interrater reliability was measured by comparing standard scores at different testing sites and the test manual indicates that scoring did not vary between sites, therefore, variation in scores cannot be contributed to testing in different sites with different examiners.

2.3.2 Assessment of Language and Literacy

The Assessment of Language and Literacy (ALL; Lombardino et al., 2005) is a standardized assessment used to measure the spoken language and emergent literacy skills of prekindergarten, kindergarten, and first grade children and served as the dependent variable in this investigation. The ALL is organized into numerous subtasks; for this study six subtasks were selected. Those six tasks were categorized based on the Outside-In and Inside-Out literacy skills as described by Whitehurst and Lonigan (1998). The Inside-Out tasks included Letter Knowledge, Rhyme Knowledge, Elision, Phonics Knowledge, and
Book Handling. The Outside-In based tasks included Word Relationships and Listening Comprehension. The ALL was administered pre- and post-intervention to determine the effect of the training on each emergent literacy domain. With the exception of being delivered remotely, all tasks were administered in accordance with the test manual, following all basal and ceiling rules. For each task, the examiner presented the visual prompt (e.g., picture, letter) on the screen which was shared virtually onto the child’s device. According to the ALL manual, the raters scored a total of four subtests to determine interrater reliability. Of those four, two were relevant to the current study, word relationships and listening comprehension. Average percent agreement for word relationships was 99%. For listening comprehension, percent agreement was 99%. Each subtest used for this study is described below.

2.3.3 Inside-Out Skills

**Letter Knowledge** The Letter Knowledge subtest measured a child’s ability to name letters. The examiner told the child “I’m going to place my mouse/arrow on a letter, and I want you tell me what it is.” The examiner then placed the mouse/arrow on a letter and said, “What letter is this?” The child was expected to respond by saying the letter. For this task there was one practice item and a total of ten test items. There were no basal rules, however, a ceiling was reached once the examinee scored a zero on six consecutive items. Inter-rater reliability for this task was 96%.

**Rhyme Knowledge** The Rhyme Knowledge subtest included tasks which required the participant to identify whether two words rhyme, identify words that do not rhyme, and produce words that rhyme with a given word. Also, the participants were asked to produce a word that rhymes with a given word within a story format. For the rhyming identification
task, the examiner said “I am going to name some pictures and I want you to tell me if the words rhyme. Tell me if the words sound alike.” The examiner then said the words to the child with a visual representation of the stimulus words provided on the screen. For the rhyme oddity task, the examiner said: “this time I’m going to name some pictures and I want you to tell me which word doesn’t rhyme. Tell me the one that does not sound like the others.” The same procedure applied but the child was expected to say the word that did not rhyme with the others. For the first portion of the rhyme production task, the examiner prompted the child by saying “I’m going to say a word and I want you to tell me another word that rhymes with the one I said.” A picture was provided for the stimulus word. For the second portion of this task, the prompts were in a story format. The examiner began story, and the child had to complete each sentence with a word that rhymes with a certain word in the sentence. For example, the examiner said “When she peeked under the rug, she saw a…” The child should have provided a word that rhymes with “rug.” No pictures were provided for the story portion of the task. The subtest was discontinued if the participant scores a zero on six consecutive items. Inter-rater reliability for the Rhyme Knowledge subtask was 93%.

**Elision** The Elision subtest consisted of two tasks that required the participants to delete syllables and sounds in words. For the first task the child was shown two pictures. The examiner said a compound word that corresponded to those pictures. For example, if the pictures consisted of a cup and a cake, the examiner would say “cupcake.” The child was then prompted to repeat the word. The examiner then covered one of the pictures and the child was prompted to repeat the word without saying the part that corresponded to the covered picture. For the second task, the child was expected to do the same thing as with
task one, but pictures will not be provided. The task items progressed in difficulty. The subtest was discontinued once the participant scored a zero on six consecutive items. Inter-rater reliability for elision was 94%.

**Phonics** The Phonics tasks consisted of the participant telling the examiner what sound the letter makes as the clinician placed her mouse/arrow on the letter the child was expected to provide the sound. The examiner told the child “I’m going to show you some letters and I want you to tell me the sound they make.” The examiner then asked “what sound does this letter make” while simultaneously holding the mouse/arrow on the visual representation of the letter. The child was expected to respond by naming the sound that corresponded to the letter. The subtest was discontinued once the participant scored a zero on six consecutive items. Inter-rater reliability for scoring this task was 85%.

**Book Handling** The Book Handling task required the participants to demonstrate their knowledge of print concepts through handling of a book. The participant, while holding a book s/he has at home, was asked to identify numerous book and print conventions such as the book cover, title, and first word on the page. For example, while the participant held the book the examiner told them to “show me the title of the book” or “show me with your finger which way you go when you read this page.” The participants used a book of their choice from their home. No discontinue rule was applied to this subtest. Inter-rater reliability was available only for 2 of the participants at post-test due to poor video quality and was 69%.

2.3.4 **Outside-In Skills**

**Word Relationships** The word relationships task was used to examine the participants’ ability to identify and express similarities between words. The word
relationships will be expressed in the following ways: object-attribute (e.g., pillow-soft), agent-action (e.g., rabbit-hop), action-object (e.g., drive-car), part-whole (e.g., window-glass), object-location (e.g., monkey-jungle), cause-effect (e.g., sleepy-yawn), subordinate-superordinate (e.g., bus-transportation), and semantic class (e.g., coat-hat). The examiner would say “I am going to say two words and I want you to tell me how the words go together. How do ride and bike go together?” The participant would be expected to say “you ride a bike” or something similar. No pictures will be provided. The subtest was discontinued once the participant scored a zero on six consecutive items. Inter-rater reliability for this task was 91%.

**Listening Comprehension** The Listening comprehension subtest was used to evaluate the participants’ story comprehension and retell of stories of increasing length and difficulty. The participant was presented with two tasks after listening to the clinician read the story to him/her. First, the child had to retell the story. Then they were required to answer questions about the story. Types of questions asked include wh-questions such as “what is Tina doing” and “when does Sam stop coloring?” A sequence of pictures was provided for the first two stories, but no pictures were provided for the remaining three. A discontinue rule was not applied to this subtest. Inter-rater reliability for the listening comprehension task was 88%.

**2.4 Procedure**

Participants were recruited from numerous public schools and Head Start programs around the Mobile County area. When participants indicated initial interest in the study they were contacted by phone and asked a series of questions, such as “what is your child’s
birthday,” “where does your child spend most of their day,” “are you concerned with your child’s development,” and “what is your occupation” to determine initial eligibility before moving on to the subsequent steps. If deemed eligible at that point, research personnel sent a consent form electronically via a Google Form and demographic questionnaire in the same format via email to confirm that they are willing to be video recorded and to confirm eligibility. The eligibility requirements included typically developing four-year old; mother 19-years or older; the parent or caregiver could not have been an educator; have internet access; have a touchscreen device available or child could properly operate a mouse; complete a consent form; and willingly participate in the 8-week study. Once the child was determined to be eligible and consent was given, the examiner scheduled a time that best fit the parent participant’s schedule to administer the Quick Interactive Language Screener (QUILS; Golinkoff et al., 2017) via Zoom to the child, which took approximately 30 minutes. The participants were instructed to join the meeting via a touchscreen or computer device (e.g., iPad/laptop). If the child’s score was determined to be within normal limits (i.e., overall standard score =/> 86) the parent was contacted to schedule a virtual meeting for administration of the Assessment of Language and Literacy (ALL; Lombardino et al., 2005). The ALL was administered over two 30-minute sessions. The order of administration of the ALL tasks were randomly ordered for each participant.

Following administration of the ALL, one of the project researchers other than the examiner contacted the parent participant to thank him/her/they for setting up the assessment meetings and to confirm continued interest in participating in the project. Then, books, manipulative materials, the Weekly Strategy Logs, along with a letter of instruction to download the WhatsApp, were mailed to the participant. Once the
participant received the materials, downloaded the application, and sent a message via the app to project personnel, the Telecoaching program began. For each week of the training program, at the beginning of the week, the participants received a 2-4-minute video depicting the strategy for that week followed by a mid-week video approximately 1-2-minutes to briefly remind the mothers to continue use of the strategy and then an end-of-the week text message further encouraging the use of the strategy within a different context or with new parameters (i.e., extension activity). See Appendix C for examples of messages via the WhatsApp. Participants also were randomly selected to send videos utilizing the week’s strategy and take pictures and send in their Weekly Journal Logs via the WhatsApp.

Once participants completed the training program, the child participants were reassessed using the ALL (Lombardino et al., 2005) to determine whether the training impacted the development of the child’s emergent literacy skills. Scoring reliability was conducted by having a member of the research team, who was trained by the author, independently score the ALL using recorded videos. Inter-rate reliability across all tasks was 88%. Note that video quality was poor for the Phonics Knowledge, Word Relationships, and Book Handling subtasks.
CHAPTER IV
RESULTS

Descriptive statistics of participant performance before and after the training program are provided for all participants as well as for the code-based and meaning-based groups separately. Individual participant performance is presented visually. To answer the primary research question, *What is the effect of an 8-week remote parent training program on the emergent literacy skills of four-year-old children*, a series of non-parametric Wilcoxon signed-rank tests (as an alternative to the paired sample t-test because some of the variables were not normally distributed) were conducted to determine whether there were any reliable differences in the children’s average performance before and after the program. Secondarily, to determine whether there may be evidence for a differential effect of group assignment on specific emergent literacy skills, Mann-Whitney U tests were conducted. Because of the limited number of participants, and thus, limited power, interpretation of the results focuses on the effect sizes, presented as an $r$ coefficient for the Wilcoxon signed-rank tests and eta squared for the Mann-Whitney U.

3.1 Whole Group Summary Statistics

3.1.1 Outside-In Skills

The outcome variables of interest for Outside-In skills were listening comprehension and word relationships. Recall that the listening comprehension subtest
required child participants to listen, retell, and answer questions about a story and the
word relationship subtest required the children to identify and express similarities
between words. According to the Wilcoxon Signed-Rank test, the children’s performance
on the listening comprehension task was significantly higher following the treatment
program with a strong effect size ($p = 0.012, r = 0.632$). The mean was 11 at pre-test and
18.625 at post-test. The effect size for word relationships was small ($p = 0.017; r =
0.2595$) with a mean value of 9.75 at pretest and 17.125 at post-test. See Table 2 for a
visual representation of these results.

3.1.2 Inside-Out Skills

The outcome variables of interest for Inside-Out skills were Letter Knowledge, Rhyme Knowledge, Phonics Knowledge, Elision, and Book Handling. For Letter Knowledge, participants were required to name letters when prompted which also are presented in Table 2. There was a small and non-significant effect size ($p = 0.276, r =
0.27225$) for Letter Knowledge with the average score at pretest being 6.125 and posttest being 7. The Rhyme Knowledge subtest required the children to determine whether two words rhymed, identify words that did not rhyme, and produce words that rhymed with a given word. The mean score at pretest was 6 while the posttest average was 9.625 with a medium to large and significant effect size ($p = 0.017, r = 0.596$). For Phonics Knowledge, child participants were required to produce a sound when provided a letter. There was no significant difference between the mean score from pre-test to post-test and a small effect size ($p = 0.206, r = 0.316$). The mean pretest score for Phonics Knowledge was 11.5 while the mean posttest score was 13.5. The elision subtest required the children to delete sounds and syllables in words. There was a significant increase in mean scores
for Elision following the training program \((p = 0.046, r = 0.498)\) with a medium effect size. The average pre-test score for this subtest was 4.625 while the average posttest score was 8.375. The last subtest assessing Inside-Out skills was Book Handling, requiring the child participants to demonstrate their knowledge of print concepts through handling a book (e.g., Point to the title of the book). There was no significant difference between pre- and post-test scores \((p = 0.161, r = 0.351)\). The average pretest score for Book Handling was 4.5, while the post-test average was 5.75. Figure 1 provides a visual representation of average overall scores from pre- to post-test for each subtask of the ALL.

3.2 Individual Participant Results

3.2.1 Code-based Group

A visual representation of each participant’s performance before and after the training program are presented in Figures 2 through 9. Each participant either progressed, remained the same, or showed regression in certain areas. Pre- and post- performance for Participant A is depicted in Figure 2. As can be seen from the chart, this participant’s score did not change for Letter Knowledge and Phonics. The most drastic gains were noted for Elision, Listening Comprehension, and Book Handling, but smaller increases were observed for Rhyme Knowledge. Participant B demonstrated the most substantial changes in the areas of Rhyme Knowledge, Word Relationships, Phonics Knowledge, and Listening Comprehension. For participant B there was no change in performance on the Elision task, and the participant showed small improvements in Letter Knowledge and Book Handling (see Figure 3). Participant C showed small improvements in Letter
Knowledge and Rhyme Knowledge but regressed in Elision and Phonics Knowledge. Participant C had the most drastic improvement in Listening Comprehension, but scores remained the same from pre-to post-test for Book Handling (refer to Figure 4). Participant D improved for all subtasks, with the most drastic being in the areas of Elision and Word Relationships (refer to Figure 5). Participant E showed improvement in Rhyme Knowledge, Word Relationships, Phonics Knowledge, Listening Comprehension, and Book Handling. Participant E’s scores remained the same for Letter Knowledge and Elision tasks (refer to Figure 6). In conclusion, all participants in this group improved in at least two of the subtasks focused on Inside-Out skills. Additionally, they all improved in both Outside-In tasks, which were Listening Comprehension and Word Relationships.

3.2.2 Meaning-Based Group

Participant F as seen in Figure 7, had the most significant changes in Phonics Knowledge and Listening Comprehension. This participant regressed in the area of Word Relationships but showed small improvements in Letter Knowledge, Rhyme Knowledge, Elision, and Book Handling. Participant G obtained the same score from pre- to post-test in the areas of Rhyme Knowledge and Phonics Knowledge. This participant regressed in Letter Knowledge and Book Handling, while showing improvement in Elision, Word Relationships, and Listening Comprehension (refer to Figure 8). Lastly, participant H had the most substantial increase in Rhyme Knowledge, Word Relationships, and Listening Comprehension. Participant H made small gains in Elision and Phonics Knowledge, remained the same in Letter knowledge, and regressed in Book Handling (refer to Figure 9). In conclusion, participants in the meaning-based group all showed improvement in Listening Comprehension, which is an Outside-In skill that the meaning-based strategies
aimed to facilitate. Additionally, performance on the Word Relationships task increased from pre-to post-test for two of the three participants in the meaning-based group. Lastly, all participants in this group improved in at least one of the other tasks that focused on *Inside-Out* skills.

To summarize, all participants improved their scores from pre- to post-test for at least three of the seven tasks on the ALL. In general, the most notable gains were found with the Listening Comprehension subtest. Interestingly, regardless of group assignment, each participant showed improvement with both meaning-based and code-based skills following the program, possibly due to relative aging during the process.

### 3.3 Group Comparisons

Tables 3 and 4 provide the mean, standard deviations, and minimum and maximum scores for participants in the code-based and meaning-based groups, respectively. As depicted in Figures 10 and 11, mean scores for each group on each of the ALL tasks increased from pre- to post-test following participation in the program. To determine whether there was a trend for participants in the code-based group to show more improvement with *Inside-Out* skills compared to *Outside-In* skills, and vice versa for the meaning-based group, a series of Mann-Whitney U tests were conducted. First, the participants’ performance at pre-test was compared. All comparisons were non-significant, and the effect sizes (η2) ranged from 0.011 (small) to 0.081 (medium). Because of the medium effects detected for the Phonics (meaning-based group higher), Elision (code-based group higher), and Listening Comprehension (meaning-based group higher) tasks, these results should be interpreted with much caution.
At post-test, all comparisons were non-significant and effect sizes ranged from $\eta^2 = .003$ (negligent) to .393 (very large). Specifically, at post-test, the code-based group performed better than the meaning-based group on the Letter Knowledge ($\eta^2 = .084$) and Elision ($\eta^2 = .079$) tasks with medium effects for both comparisons. Note that at pre-test the code-based group was already performing higher than the meaning-based group on the Elision subtest. The code-based group also performed higher than the meaning-based group at post-test for the Word Relationships task ($\eta^2 = .393$) and book handling tasks ($\eta^2 = .208$) with very large effects. There was little difference found between the groups at post-test for the Rhyme Knowledge and Phonics measures ($\eta^2 = .003$) although the scores of the code-based group were higher than those of the meaning-based group. At post-test, the meaning-based group performed better than the code-based group on only one measure, Listening Comprehension with a medium effect ($\eta^2 = .079$). Note that the meaning-based group was already performing better than the code-based group on the listening comprehension task at pre-test.
CHAPTER V
DISCUSSION

The purpose of this study was to investigate a telecoaching program, in which researchers provided parents with shared reading strategies in an effort to facilitate the development of emergent literacy skills. The current study expanded on various previous studies that focused on facilitating emergent literacy skills using in-person (e.g., Crain-Thoreson & Dale, 1999; Justice & Ezell, 2000) or live online training programs (e.g., Akemoglu, 2021) by delivering parent training in a text-based remote format. The primary research question in the current study was *What is the effect of an 8-week remote parent training program on the emergent literacy skills of four-year-old children?* With a secondary interest in determining whether there may be evidence for a differential effect of group assignment on specific emergent literacy skills. As hypothesized and consistent with previous research (e.g., Arnold et al., 1994; Wainer & Ingersoll, 2015; Comer et al., 2017), the current results indicated improvement of both *Inside-Out* and *Outside-In* emergent literacy skills for the children who participated in the program. The results across all participants indicated large effect sizes for the Rhyme Knowledge, Word Relationships, and Listening Comprehension subtests. The *r*-values for the Elision and Phonics Knowledge subtests indicated a medium effect size. However, the effect size was relatively small for Letter Knowledge and Book Handling.

It was hypothesized that there would be a trend pertaining to the differential effects of the two types of strategies provided during the training program. Specifically, it was hypothesized that there would be improvement in the children’s *Inside-Out* skills (e.g., print knowledge, phonological awareness, alphabet knowledge) for participants
whose parents were trained to use code-based strategies (e.g., print referencing, alphabet knowledge, phonological awareness, etc). For parents who were trained to use meaning-based strategies (e.g., asking open ended questions, inferencing, etc.) it was expected that their children’s outside-in skills such as vocabulary knowledge and story understanding would improve. Although the current findings are not robustly supportive of this hypothesis, some individual children’s performances indicated support of the hypothesis. For example, Participant D, a member of the code-based group improved in all areas that were hypothesized to be facilitated by code-based strategies, including Letter Knowledge, Rhyme Knowledge, Elision, Phonics Knowledge, and Book Handling. Participant H, who was in the meaning-based group showed improvement in the areas that were hypothesized to be facilitated by meaning-based strategies, Word Relationships and Listening Comprehension. Further, all participants in the meaning-based group improved their scores on at least one measure of Outside-In (i.e., meaning-based) skills. For this same group, the effect sizes for the change in the two Outside-In skills were medium and large for Word Relationships and Listening Comprehension, respectively, which is in line with Senechal et al. (1998) and Reese et al. (2010) who indicated that using certain strategies facilitated certain emergent literacy skills. This also is consistent with previous investigations which found significant effects for measures of vocabulary after training parents to change their reading styles to support meaning-based skills (Whitehurst et al., 1988; Arnold et al., 1994; Whitehurst & Lonigan, 1998).

Similar to the meaning-based group, all members of the code-based group improved on at least two areas that measure Inside-Out (i.e., code-based) Skills. In contrast to the meaning-based group, the effect sizes for code-based measures such as
Rhyme Knowledge, Phonics Knowledge, and Book Handling were small; Letter Knowledge and Elision did have a medium effect size. These results are consistent with those of previous researchers (e.g., Ezell et al., 2000, Justice & Ezell, 2000) because the strategies they provided to parents focused on facilitating *Inside-Out* skills, which yielded results of improved child performance for those areas. This indicates that training parents to use print reference and other code-based strategies facilitates *Inside-Out* skills.

When comparing the performance of the two groups, it was noted that the code-based group’s average scores increased in all areas from pre- to post-test, but the average scores in the meaning-based group regressed in areas such as Letter Knowledge and Book Handling. This finding is not all that surprising given that at least some explicit instruction is usually required to support children’s knowledge of letters (Lonigan et al., 2000; Spira et al., 2005). The fact that all participants improved in at least one Outside-In and Inside-Out skill regardless of which group they were in may have a number of potential explanations. First, outside instruction/experience with book reading or educational setting was not accounted for in this investigation so it may be that some or all of the children were participating in shared reading experiences in pre-school, at home, or with other caregivers that supported a number of different skills. In fact, when surveyed, five parents reported that their child spent the majority of his/her day in the home, two reported the child being in school, and one reported the child being in a daycare setting. The differing environments between participants can impact the outcomes because a child who is in school is most likely receiving more formal instruction regarding formal literacy skills compared to a child who spends most of their time in the home. Although the parent may be engaging in literacy activities with the
child, they are not formally trained for literacy instruction like a teacher or speech language pathologist.

Fidelity to the program likely also impacted the current findings. Based on the results obtained from the fidelity logs and surveys in this study, the parents’ use of provided strategies throughout each week varied. For example, participant G’s fidelity results indicated inconsistencies in the parent’s use of strategies each week and G’s performance from pre- to post-testing was also inconsistent, staying the same or regressing in 4 of the 7 areas. Related to this, a recent investigation by Akemoglu and colleagues (2021) found that parents’ adherence to the program/use of strategies increased and remained consistent only after coaching was provided. In the current study, parents were encouraged, but specific feedback regarding their use of their strategies was not provided. This may have led to the varied fidelity as well as variability in the children’s improvement. The final explanation is that the current findings are too preliminary to determine whether the trends in the data will hold out with bigger samples.

4.1 Limitations

Limitations of this study include the small number of participants which precluded more sophisticated statistical analyses and limited the interpretation of the current results. Secondly, the sample in this study represents a relatively narrow population of pre-school children and their mothers. Although recruitment efforts were included across the U.S., a majority of participants were from the Southeastern region, and in particular one from one area/state.
Effect sizes and p-values provided for these preliminary findings should be interpreted with caution not only because of the small number of participants, but because of other factors that were not controlled for in this investigation. As mentioned previously, children’s reading experience and daily environment was not controlled for but based on parent report, and it largely varied. Additionally, because several participants started the program toward the end of the summer, the children’s environment changed over the course of the program, from being at home to transitioning to school.

The training program did not consist of direct training due to the asynchronous virtual format. Therefore, parents were not provided the opportunity to ask questions about the strategies in real time, leaving parents to devise their own interpretation of the instructions for utilizing the strategies. This could have affected the parent-child reading behaviors and interactions, in turn impacting the facilitation of emergent literacy skills. For future investigations, researchers may wish to incorporate some live synchronous coaching which appears to be promising for increasing parents facilitative reading behaviors during shared book reading (Akemoglu et al., 2021).

Limited variability in the parents’ education level and race/ethnicity also was a limitation of the current study and not representative of the population as a whole. All parent participants had at least a bachelor’s degree or higher educational level, which may mean there was a lack of representation of families with a variety of socioeconomic backgrounds. This is an important consideration for future research because children from lower SES backgrounds may lack accessibility to literacy materials or have family experiences and/or book reading routines that are qualitatively different from families.
with other SES backgrounds (Bracken & Fischel, 2008; Froiland et al., 2014; Luo et al., 2020; De Bondt et al., 2020).

Lastly, most participants were white (5), while the remaining participants were from minority backgrounds with 1 being black, 1 multi-racial, and 1 Hispanic. This lacks representation of the population as a whole. A lack of diversity in research is a historical and current problem that needs to be addressed in future research. To do so, it may be that recruitment efforts need to focus on geographic areas with diverse populations as well as areas with individuals from low SES backgrounds. For the current project, recruitment efforts proved to be one of the most challenging parts of conducting the study. Therefore, future research should also focus on creating ways to better recruit child and parent participants, possibly through providing more enticing incentives so that individuals not only express interest but complete the entire program. Additionally, recruitment efforts were mainly conducted in the southeastern region of the United States. With that being said, future research should expand the region of recruitment because it could be a factor that improves the sample size.

4.2 Clinical Implications

The preliminary findings in this study further support the well-established importance of shared book reading between mothers and their children for facilitating children’s early literacy skills (Scarborough et al., 1991; Payne et al., 1994; Anderson et al., 1995). The findings also show promise that parents can be trained to use interactive book reading strategies through a text-based and asynchronous remote format. Although more research is needed that controls for a number of factors such as child book reading
experiences and daily education activities, early childhood educators and/or practitioners may wish to support the families they work with in this way. Although not investigated in the current study, results from the recent investigation by Akemoglu and colleagues (2021) indicated coaching may be a critical component in supporting parents’ consistent use of interactive book reading strategies.

Educators and practitioners often have large class sizes and/or caseloads which preclude them from offering preventive support members of the community or children who are at risk. Should a remote-based text format be found to be effective this would be important for practitioners and parents alike. Practitioners could reach a larger number of families using this format that requires minimal time and money for potentially meaningful outcomes. The cost of materials (e.g., books, crayons) for extension activities would require little financial burden on the part of the parent. Therefore, this would not only ease the burden on parents, but practitioners and educators as well. Due to parental satisfaction of the program being high, parent-child shared book reading may be considered one of the most important activities a parent can do with their young children to support their language and literacy skills.

4.3 Conclusion

In the current study eight children and their mothers participated in a remote training program that taught mothers to use a variety of strategies during shared reading and extension activities to support their children’s emergent literacy skills. Results indicated that the average performance of the children on a variety of skills increased following the training, but the magnitude of these effects varied. Whether these
improvements can be attributed to the training program or other factors is unknown. Because children in both the meaning-based and code-based groups in improved in both meaning-based and code-based skills, it is unclear to date if this format is effective for improving specific types of emergent literacy skills and warrants future research.
REFERENCES


Dowdall, N., Melendez-Torres, G. J., Murray, L., Gardner, F., Hartford, L.,


## APPENDICES

### Appendix A

### Tables

Table 1.

Skills Targeted/Strategy Name, Strategy Explanation and Skill Explanation for each Week of Telecoaching Program for each Group

<table>
<thead>
<tr>
<th>Week</th>
<th>Inside-Out (Code-Based)</th>
<th>Outside-In (Meaning-Based)</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td><strong>All By Myself (Little Critter) by Mercer Mayer</strong></td>
<td><strong>All By Myself (Little Critter) by Mercer Mayer</strong></td>
</tr>
<tr>
<td></td>
<td>Print Knowledge/Book Concepts</td>
<td>Vocabulary/Describing While Reading</td>
</tr>
<tr>
<td></td>
<td>Parent taught to explicitly identify different parts of book and process related to reading such as: title, author, turning the page, first word on page</td>
<td>Parent taught to describe pictures in book using adjectives and general descriptive language</td>
</tr>
<tr>
<td>2</td>
<td><strong>Rhyming Dust Bunnies by Jan Thomas</strong></td>
<td><strong>Jack and the Beanstalk by Carmen Crowe</strong></td>
</tr>
<tr>
<td></td>
<td>Phonological Awareness/Rhymes in Books</td>
<td>Story Grammar/Sequencing in Books</td>
</tr>
<tr>
<td></td>
<td>Parent taught to read rhyming book and explicitly label and define words that rhyme</td>
<td>Parent taught to explicit identify the order of events in the story using timing words such as: first, next, last, then, finally, after</td>
</tr>
<tr>
<td>3</td>
<td><strong>Pinkerton, Behave by Steven Kellogg</strong></td>
<td><strong>Pinkerton, Behave by Steven Kellogg</strong></td>
</tr>
<tr>
<td></td>
<td>Print Knowledge/Tracking Print</td>
<td>Story Grammar/Predictions in Books</td>
</tr>
<tr>
<td></td>
<td>Parent taught to track print while reading to show child that it is the words that are read not the pictures</td>
<td>Parent taught to model thinking aloud about events in a story and predicting what will happen throughout the story</td>
</tr>
<tr>
<td>#</td>
<td>Title</td>
<td>Activity</td>
</tr>
<tr>
<td>----</td>
<td>--------------------------------------------</td>
<td>--------------------------------------------------------------------------</td>
</tr>
<tr>
<td>4</td>
<td><em>Bee-Bim Bop</em> by Linda Sue Park</td>
<td>Phonological Awareness/Same Beginning sounds</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>5</td>
<td><em>Corduroy Makes a Cake</em> by Alison Inches &amp; Don Freeman</td>
<td>Print Knowledge/Talking About Print</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>6</td>
<td><em>Backyard Bug Books for Kids</em> by Lauren Davidson</td>
<td>Phonological Awareness/Words Up Close</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>7</td>
<td><em>AlphaOops: The Day Z Went First</em> by Alethea Kontis &amp; Bob Kolar</td>
<td>Alphabet Knowledge/Letters and Sounds</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>8</td>
<td><em>I Spy Letters</em> by Jean Marzollo &amp; Walter Wick</td>
<td>Alphabet Knowledge/Looking at Letters</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>
Table 2.

Average Performance Overall for All Participants from Pre- to Post Test Including P-Values and Effect Sizes.

<table>
<thead>
<tr>
<th>ALL Subtest</th>
<th>Pre-Test Mean (SD)</th>
<th>Pre-Test Minimum/Maximum Scores</th>
<th>Post-Test Mean (SD)</th>
<th>Post-Test Minimum/Maximum Scores</th>
<th>P-Value</th>
<th>Effect Size ®</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Inside-Out</strong></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Letter Knowledge</td>
<td>6.125 (3.91)</td>
<td>1/10</td>
<td>7 (3.07)</td>
<td>1/10</td>
<td>0.276</td>
<td>0.27</td>
</tr>
<tr>
<td>Rhyme Knowledge</td>
<td>6 (5.76)</td>
<td>1/16</td>
<td>9.625 (5.42)</td>
<td>4/18</td>
<td>0.017</td>
<td>0.596</td>
</tr>
<tr>
<td>Elision</td>
<td>4.625 (4.03)</td>
<td>0/13</td>
<td>8.375 (5.42)</td>
<td>2/18</td>
<td>0.046</td>
<td>0.498</td>
</tr>
<tr>
<td>Phonics</td>
<td>11.5 (10.52)</td>
<td>1/24</td>
<td>13.5 (8.50)</td>
<td>2/24</td>
<td>0.206</td>
<td>0.316</td>
</tr>
<tr>
<td>Book Handling</td>
<td>4.5 (2.33)</td>
<td>2/8</td>
<td>5.75 (1.83)</td>
<td>3/8</td>
<td>0.162</td>
<td>0.251</td>
</tr>
<tr>
<td><strong>Outside-In</strong></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Word Relationships</td>
<td>9.75 (7.65)</td>
<td>1/22</td>
<td>17.125 (5.36)</td>
<td>10/25</td>
<td>0.017</td>
<td>0.595</td>
</tr>
<tr>
<td>Listening Comprehension</td>
<td>11 (3.81)</td>
<td>4/15</td>
<td>18.625 (3.99)</td>
<td>14/26</td>
<td>0.012</td>
<td>0.632</td>
</tr>
</tbody>
</table>

*Note.* This table indicates average scores and standard deviations for each subtest across all participants who completed the program. Additionally, p-value and r-coefficient are provided to indicate significant changes and effect size.
Table 3.

Information (Standard Deviations in Parentheses) for All Participants Included in the Code-Based Strategies Group.

<table>
<thead>
<tr>
<th>Subtest</th>
<th>Pre-Test Mean (SD)</th>
<th>Pre-Test Minimum/ Maximum Scores</th>
<th>Post-Test Mean (SD)</th>
<th>Post-Test Minimum/ Maximum Scores</th>
<th>+/-</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td><strong>Inside-Out</strong></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Letter Knowledge</td>
<td>6.2 (4.02)</td>
<td>2/10</td>
<td>7.8 (2.49)</td>
<td>4/10</td>
<td>+1.6</td>
</tr>
<tr>
<td>Rhyme Knowledge</td>
<td>5.6 (6.12)</td>
<td>1/16</td>
<td>9.8 (6.42)</td>
<td>4/18</td>
<td>+4.2</td>
</tr>
<tr>
<td>Elision</td>
<td>5.6 (4.56)</td>
<td>1/13</td>
<td>9.4 (6.27)</td>
<td>3/18</td>
<td>+3.8</td>
</tr>
<tr>
<td>Phonics Knowledge</td>
<td>13.2 (9.81)</td>
<td>3/23</td>
<td>14.4 (7.86)</td>
<td>8/23</td>
<td>+1.2</td>
</tr>
<tr>
<td>Book Handling</td>
<td>4.2 (2.17)</td>
<td>2/7</td>
<td>6.4 (1.82)</td>
<td>4/8</td>
<td>+2.2</td>
</tr>
<tr>
<td><strong>Outside-In</strong></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Word Relationships</td>
<td>11.2 (9.31)</td>
<td>1/22</td>
<td>19.4 (5.37)</td>
<td>11/25</td>
<td>+8.2</td>
</tr>
<tr>
<td>Listening</td>
<td>10.2 (4.49)</td>
<td>4/15</td>
<td>18.2 (4.92)</td>
<td>14/28</td>
<td>+8</td>
</tr>
</tbody>
</table>


Table 4.

Average Performance (Standard Deviations) for all Participants Included in the Meaning Based Strategies Group from Pre- to Post-Test Including Range of Scores

<table>
<thead>
<tr>
<th>Subtest</th>
<th>Pre-Test Mean (SD)</th>
<th>Pre-Test Minimum/Maximum Scores</th>
<th>Post-Test Mean (SD)</th>
<th>Post-Test Minimum/Maximum Scores</th>
<th>+/-</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Inside-Out</strong></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Letter Knowledge</td>
<td>6 (4.58)</td>
<td>1/10</td>
<td>5.7 (4.04)</td>
<td>1/8</td>
<td>-0.3</td>
</tr>
<tr>
<td>Rhyme Knowledge</td>
<td>6.7 (6.35)</td>
<td>3/14</td>
<td>9.3 (4.51)</td>
<td>5/14</td>
<td>+2.6</td>
</tr>
<tr>
<td>Elision</td>
<td>3 (3)</td>
<td>0/6</td>
<td>6.7 (4.16)</td>
<td>2/10</td>
<td>+3.7</td>
</tr>
<tr>
<td>Phonics Knowledge</td>
<td>8.7 (13.28)</td>
<td>1/24</td>
<td>12 (11.14)</td>
<td>2/24</td>
<td>+3.3</td>
</tr>
<tr>
<td>Book Handling</td>
<td>5 (3)</td>
<td>2/8</td>
<td>4.7 (1.53)</td>
<td>3/6</td>
<td>-0.3</td>
</tr>
<tr>
<td><strong>Outside-In</strong></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Word Relationships</td>
<td>7.3 (4.16)</td>
<td>4/12</td>
<td>13.3 (2.89)</td>
<td>10/15</td>
<td>+6</td>
</tr>
<tr>
<td>Listening Comprehension</td>
<td>12.3 (2.52)</td>
<td>10/15</td>
<td>19.3 (2.52)</td>
<td>17/22</td>
<td>+7</td>
</tr>
</tbody>
</table>
Figure 1

Mean pre- and post-test scores on the ALL for all participants

Note. ALL = Assessment of Literacy and Language. The blue bars represent average scores before the start of the program, while the orange bars represent average scores following the conclusion of the program.
Figure 2

Results Indicating Individual Performance from Pre- to Post-Test for Participant A

*Note.* The blue bars represent performance before the start of the training program, while the orange bars represent performance following the conclusion of the training program.
Figure 3

Results Indicating Individual Performance from Pre- to Post-Test for Participant B

*Note.* The blue bars represent performance before the start of the training program, while the orange bars represent performance following the conclusion of the training program.
Figure 4

Results Indicating Individual Performance from Pre- to Post-Test for Participant C

Note. The blue bars represent performance before the start of the training program, while the orange bars represent performance following the conclusion of the training program.
Figure 5

Results Indicating Individual Performance from Pre- to Post-Test for Participant D

Note. The blue bars represent performance before the start of the training program, while the orange bars represent performance following the conclusion of the training program.
Figure 6

Results Indicating Individual Performance from Pre- to Post-Test for Participant E

Note. The blue bars represent performance before the start of the training program, while the orange bars represent performance following the conclusion of the training program.
Figure 7

Results Indicating Individual Performance from Pre- to Post-Test for Participant F

Note. The blue bars represent performance before the start of the training program, while the orange bars represent performance following the conclusion of the training program.
Figure 8

Results Indicating Individual Performance from Pre- to Post-Test for Participant G

Note. The blue bars represent performance before the start of the training program, while the orange bars represent performance following the conclusion of the training program.
Figure 9

Results Indicating Individual Performance from Pre- to Post-Test for Participant H

Note. The blue bars represent performance before the start of the training program, while the orange bars represent performance following the conclusion of the training program.
Figure 10

Results Indicating the Average Change from Pre- to Post-Test for Participants in the Code-Based Group

Note. The blue bars represent the overall performance of the code-based group before the start of the program, while the orange bars represent their performance at the conclusion of the training program.
Figure 11
Results Indicating the Average Change from Pre- to Post-Test for Participants in the Meaning-Based Group

Note. The blue bars represent the participants individual scores before the start of the training program, while the orange bars represent their performance following the conclusion of the training program.
Appendix C
Sample Introduction Scripts for Video Modeling for Each Correspondence for a Week

Inside-Out

Monday: Book Concepts

1. “Today I will show you how to help your child be more aware of how to correctly handle a book, the purpose of words in books, and how those words are organized. We call this activity “book concepts.”
2. “This activity is important because it helps your child learn about how books are organized. This word and book knowledge is the foundation for later reading skills.”
3. “The only thing you will need for this lesson is a book. You can use the book we’ve sent you, All By Myself, which I will use.”
4. “Watch as I model some things you can say to your child to help your child learn more about books. Be sure your child is sitting next to you or in your lap while you’re reading.”
5. “Try talking about Book Concepts several times this week!”

Wednesday: Book Concepts Review

1. “Today I am sharing a reminder video to encourage you to continue teaching your child about those book concepts from earlier this week.”
2. “Remember, this activity is important because it helps your child become aware of how books are organized and helps set your child up to be a good reader when it’s time to go to school.”
3. The only thing you need for this activity is the book we sent, All By Myself. Watch as I model again for you how to talk about book concepts!

Friday: Final Push-Child Talks about Book Concepts

1. This weekend let’s see if your child can tell you about some of those book concepts you’ve been talking about this week. When you read together this weekend check if your child can show you the title of the book, the author, the first page of the book, where to start reading and stop reading on a page, and the front and back cover. You can help your child if they don’t know. Have fun!
Outside-In

Monday: Describing While Reading

1. “Today I will show you a describing technique you can use while reading with your child.”
2. “This activity is important because it helps your child learn new words. Knowing a lot of words is important for learning how to read.”
3. “The only thing you will need for this week is a book. You can use the book we’ve sent you, All By Myself.
4. “Watch as I model some things you can say to your child to help them learn new words through reading books with you. Be sure your child is sitting next to you or in your lap while you’re reading. You can read through the book one time without adding any words then when you read it again try using the technique, I’m going to show you.
5. “Try to describe the pictures while you read with your child at least one time per day. This is a great activity to do right before bedtime!”

Wednesday: Describing While Reading Review

1. “Today I am sharing a reminder video to encourage you to continue to describe the pictures when reading to your child.”
2. “Remember, this activity is important because it helps your child learn new words. The only thing you need for this activity is the book we sent, All By Myself. Watch as I model again.”
3. “Be sure to try using these techniques several more times this week!”

Friday: Final Push-Alternating Describing

1. This weekend I want you to involve your child in describing the book you’re reading. You can use the All By Myself book again. When reading try taking turns with your child when describing the pictures on the pages. You describe one page and then your child describes the next. Have fun with your child while doing this!
Appendix D
Weekly Strategy Journal Sample

<table>
<thead>
<tr>
<th>TRACKING: Tally the numbers for each day you read</th>
<th>Mon</th>
<th>Tues</th>
<th>Wed</th>
<th>Thurs</th>
<th>Fri</th>
<th>Sat</th>
<th>Sun</th>
<th>Weekly Totals/Comments</th>
</tr>
</thead>
<tbody>
<tr>
<td># of times you read to your child each day</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td># of times you read the book we sent</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td># of times you tried this week’s strategy</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td># of times you used any/all strategies from this program</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>FEEDBACK: Place an X in the box that is closest to your opinion</th>
<th>1</th>
<th>2</th>
<th>3</th>
<th>4</th>
<th>5</th>
<th>6</th>
<th>7</th>
<th>COMMENTS:</th>
</tr>
</thead>
<tbody>
<tr>
<td>1. How much did you like this week’s strategy?</td>
<td>Really disliked</td>
<td>Neither liked or disliked</td>
<td>Really enjoyable</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>2. How easy was this week’s strategy?</td>
<td>Really hard</td>
<td>Neither easy or hard</td>
<td>Very easy</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>3. How helpful were the videos for this week?</td>
<td>Not at all helpful</td>
<td>Neutral</td>
<td>Super helpful</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>
Appendix E
Sample WhatsApp Messages

Wednesday, Apr 28
Good afternoon! Here is your reminder video for week 2! Have fun!

Friday, Apr 23
This weekend I want you to involve your child in describing the book you’re reading. You can use the All By Myself book again. When reading try taking turns with your child when describing the pictures on the pages. You describe one page and then your child describes the next. Have fun with your child while doing this! Have a great weekend!

This weekend I want you to talk about sequencing in your daily life with your child. You can do this by talking about the order of events in your daily routines. For example, at the end of the day you can talk to your child about what happened that day. You could say “let’s think about all of the things we did today. First, we woke up. Second we had breakfast, then you went to school and I went to work... The last thing we did was go to bed.” Also, you can talk about the order of things as you do them. For example, during your nighttime routine, you could say “first let’s brush our teeth. We have to open the toothpaste and then squeeze it on the toothbrush. Next we’ll brush...”

One more thing—please take a picture of your Weekly Strategy Journal from Week 1 and message it to us. Thank you and have a wonderful weekend!
Appendix F
IRB Approval

Principal Investigator: Victoria Henbest, PhD
IRB # and Title: IRB PROTOCOL: 20-324
[1639921-1] Tele-coaching for home early literacy practices: Impact on early literacy skills and parent engagement
Status: APPROVED  Review Type: Full Committee Review
Approval Date: August 31, 2020  Submission Type: New Project
Initial Approval: August 31, 2020  Expiration Date:
Review Category: Full Board
DHHS/FDA Subpart D: 45 CFR 46.404: FDA 50.51 - Research not involving greater than MINIMAL RISK to children

This panel, operating under the authority of the DHHS Office for Human Research and Protection, assurance number FWA 00001602, and IRB Database #00000286, has reviewed the submitted materials for the following:

1. Protection of the rights and the welfare of human subjects involved.
2. The methods used to secure and the appropriateness of informed consent.
3. The risk and potential benefits to the subject.

The regulations require that the investigator not initiate any changes in the research without prior IRB approval, except where necessary to eliminate immediate hazards to the human subjects, and that all problems involving risks and adverse events be reported to the IRB immediately.

Subsequent supporting documents that have been approved will be stamped with an IRB approval and expiration date (if applicable) on every page. Copies of the supporting documents must be utilized with the current IRB approval stamp unless consent has been waived.

Notes:
EBR Full Board review was conducted and has determined that this study is minimal risk:
45 CFR 46.110 (7): Research on individual or group characteristics or behavior

There are adequate provisions to protect the privacy of subjects and to maintain the confidentiality of data

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