

EFFECTS OF A PARENT-DELIVERED SHARED READING INTERVENTION
ON PRESCHOOLERS' VOCABULARY ACQUISITION

A Dissertation

by

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ABSTRACT

Many diverse children, especially the economically disadvantaged, enter school experiencing large gaps in oral language that adversely affect their reading comprehension in later years. Vocabulary skills are part of the oral language emergent literacy skill set that plays an important role in laying the foundation for reading. Emergent literacy skills are formed before children enter formal schooling through a child's interactions with the adults in their lives and through exposure to language and print. Much research has indicated that shared reading is related to preschoolers' development of their early vocabulary skills. Consistently, the literature has shown that training to instruct parents on how to adopt interactive reading styles and techniques to build background knowledge and vocabulary enhances the positive effects of shared reading.

The purpose of this study was to shed light on what is needed to establish whether parents trained to deliver interactive techniques during shared reading to explicitly teach target vocabulary words will enhance children's acquisition of these words. For this study, six mother-preschooler dyads were recruited from an ethnically diverse Head Start center in a rural county in central Texas. The study utilized a parent-delivered shared reading curriculum intervention designed for the Project Words of Oral Reading and Language Development (Project WORLD) to develop and accelerate vocabulary through strategic and evocative conversations carried out at home after school. This study utilized a single case research withdrawal design with cumulative

frequency to compare the WORLD intervention and a “books only” (reading as usual) condition to demonstrate the effects of the WORLD, parent-delivered shared reading intervention. Both visual and statistical analyses including effect size calculation were conducted.

Results indicated that intensive shared book reading was effective at expanding participant’s knowledge of target vocabulary, and thus, that time used for cognitively complex questioning on high priority words did produce change. Consequently, because at-risk children begin school with comparatively limited vocabulary background knowledge, vocabulary instruction and discussion (and training for parents on this) may require explicit training/instruction that assists children in drawing connections between content-area knowledge, vocabulary words and real life.

DEDICATION

This project is dedicated to my family (Bennie, Kathy, Darby, and Cody) whose support for me throughout this endeavor never wavered.

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CHAPTER I

INTRODUCTION: BACKGROUND AND RATIONALIZATION

Early intervention matters most for children who begin school behind their peers in important language and literacy experiences (Coyne et al., 2004). Many diverse children, especially the economically disadvantaged, enter school experiencing large gaps in oral language that adversely affect their reading comprehension in later years (Hart & Risley, 1995). Children from low-income families, in particular, often experience language input of lower-quality with less variation and sophistication or complexity of vocabulary, as well as less exposure to print (Bus, van Ijzendoorn, & Pellegrini, 1995; Neuman, 2006). However, research has indicated that effective early prevention and intervention can mitigate the effects of economic disadvantage with lasting results (Lynch, 2007). Parents have a unique opportunity to intervene through the use of language rich conversations and interactions to prepare their children to benefit from preschool instruction. One notable means by which this can be done is through interactions and conversations around shared book reading.

Emergent literacy skills are formed before children enter formal schooling; they are formed through a child's interactions with the adults in their lives (Manz, Hughes, Barnabas, Bracaliello, & Ginsburg-Block, 2010) and through opportunities for exposure to language and print (National Research Council, 1998). Not all children have, however, access to the same language experiences. Studies have shown that many children begin Kindergarten already having acquired differing levels of the emergent

literacy skills needed for later learning to read and write (e.g., Scarborough, 2001; Hart & Risley, 1995). For example, many children enter school with vastly different levels of vocabulary knowledge (Biemiller, 2001). Unfortunately, results of numerous studies reveal that children who begin school behind their peers will likely remain behind their peers throughout their schooling (e.g., Stanovich, 1999; Whitehurst & Lonigan, 2001; Whitehurst & Massetti, 2004). Children who come from economically disadvantaged backgrounds are especially at risk for beginning and remaining behind their peers in school.

It is well documented that proximal environments, especially the home, play a crucial role in early acquisition of the literacy skills that children need to develop early on to become fluent readers. The interplay between the home environments and the literacy skills learned is vital to children's later academic achievement (NELP, 2004). Thus, it is important to understand how emergent literacy skills, during the preschool period, are acquired early, and how and what ways parents can deliver them in the home environment to promote children's acquisition of these foundational abilities. Among the most well documented emergent literacy skills is oral language development; vocabulary specifically. And, among the most promising ways to develop these skills known to parents is through shared book reading.

Emergent literacy skills matter. Emergent literacy generally refers to the “developmental precursors” to writing and reading and assumes that oral language, reading, and writing develop interdependently from an early age (before formal schooling) via children's exposure to social contexts (Whitehurst & Lonigan, 1998).

Emergent literacy is composed of several dimensions including oral language. Among the dimensions of oral language (e.g., syntax, morphology), vocabulary holds an especially privileged role for learning to read with fluency. Vocabulary skills are part of the oral language emergent literacy skill set that has been described by the National Early Literacy Panel (2004, 2009) as playing an important role in laying the foundation for reading. This skill set is important for learning to read because while children may be able to decode a word through the use of phonics, without the understanding of word meanings and related concepts, they will not be able to use words properly or to read (Dixon, 2004).

Preschool represents a window that is critical window for the development of vocabulary that is especially important for children with limited opportunities for exposure to rich oral language experiences (Bowman, Donovan, & Burns, 2001). In an analysis of their National Longitudinal Survey of Youth 1979 Cohort analysis of vocabulary growth by age, Farkas and Beron (2004) reported findings including the idea that vocabulary increases at a quick pace during the preschool ages (0-5); however, this growth is not equal for preschool aged children across ethnicity and income (Gonzalez, Pollard-Durodola, Simmons, Taylor, Davis, Kim, & Simmons, 2011), thus implicating their early learning environments.

Well documented research shows that deficits in oral language skills, and in particular, vocabulary skills, are associated with academic problems that can persist long-term. The research clearly indicates that disparities in children's vocabularies begin early in life (Hart & Risley, 1995). For example, Hart and Risley (2003) found that by

age 3, word exposure experiences already vastly differed between children depending on their family's socioeconomic status (i.e., professional-class; working-class; welfare-class). Much research has also documented the importance of vocabulary development for learning to read and for reading comprehension. For example, Scarborough (2001) found through a meta-analysis that both expressive vocabulary ($r = .45$) and receptive vocabulary ($r = .33$) in Kindergarteners revealed correlations ranging from moderate to strong with subsequent achievement in reading. Overall, the research indicates that children with better developed vocabularies and oral language skills tend to perform better in reading.

It is clear that the level of early development of young children's vocabularies can impact their reading abilities; but, under what conditions does a young child's vocabulary develop?

While there are many different ways to strengthen vocabulary instruction, two of the key strategies for building vocabulary include 1) targeted instruction for specific vocabulary words and 2) vocabulary development in context of background knowledge. Building vocabulary via targeted instruction for specific vocabulary words is important because research has documented that all vocabulary words are not of equal importance and worthy of investment of instructional time; time spent should be geared toward words that are of high utility and not commonly understood by most people who are targeted as learners (Beck, McKeown, & Kucan, 2002; Stahl, 1991). Vocabulary development in context of background information is important because research has shown that vocabulary does not develop in isolation (Hirsch, 2006); in fact, cognitive

scientists/researchers agree that reading comprehension requires knowledge about the content or domain that a text refers to and that understanding the text includes integrating this prior knowledge of content/domain with the new vocabulary words so that a “situation model” may be formed (Hirsch, 2006). Additionally, building of background knowledge in specific content areas (i.e., math, science, social-studies) through vocabulary development has been supported by research (e.g., Cannon & Karoly, 2007; Landry, 2005; National Association for the Education of Young Children (NAEYC), 2009). While many studies have been published about the benefits of early development of oral language and vocabulary, these studies have not targeted building background knowledge as a means for achieving this development. Research also suggests that use of selected words in multiple contexts aids in the facilitation of vocabulary learning (NRP, 2000). Some research suggests that, for example, learning through shared book reading should incorporate a variety of book types (both informational texts and traditional storybooks) to aid in familiarizing children with conventions of text and to prepare them for the task of subsequent informational reading (Dickinson, 2001; Duke, 2000; Hirsch, 2006; Van Kleeck, 2003).

As previously mentioned, a child’s first language experiences occur in the home. Emergent literacy skills, or vocabulary acquisition more specifically, then initially develops in the context of the home literacy environment. Several studies have supported the importance of the HLE for the acquisition of emergent literacy skills (i.e., Roberts, Jurgens, & Burchinal, 2005; Snow, Barnes, Chandler, Goodman, & Hemphill, 1991). Some researchers have indicated certain aspects of the home literacy environment (HLE)

that may be particularly important to the development of these skills. Leseman and de Jong (1998) determined that several characteristics of the HLE can be linked onto two developmental trajectories: 1) literacy opportunities which involve aspects of the HLE such as number of books in the home (Senechal et al., 1996) and opportunities for shared reading (e.g., Farver et al., 2006) and 2) and the quality of literacy-related guidance (parent-child interactions, scaffolding of learning). This second trajectory includes parent interaction style through which parents may interact with their child during activities such as shared reading to scaffold their child's learning (Kertoy, 1994). Arguably, the most well documented of the HLE literacy activities between a parent and child is shared book reading. Much research has indicated that shared reading is related to preschooler's development of their early vocabulary skills (Senechal et al., 1998).

Shared book reading refers to an interactive experience involving reading and learning that takes place between a young child or group of children and an adult (Hindman, Connor, Jewkes, & Morrison, 2008). Shared book reading and related interaction provide opportunities for adults and children to engage in cognitively demanding conversations that elicit a child's participation and can assist the child in learning through guided scaffolds. Theoretically, shared reading provides opportunities for scaffolding the child's current level of language ability to levels just beyond their current grasp of language (Vygotsky, 1978).

Shared book reading studies have highlighted important applications of principles in Vygotsky's theory (e.g., scaffolding; guided reading; social interactions). These activities appear to strengthen shared book reading effects (Mol et al., 2008).

However, research has shown that most parents do not apply these scaffolded reading techniques without training (e.g., Ahtola & Meimi, 2003; Laasko, Poikkeus, & Lyytinen, 1999). Further, we do not fully know whether simply reading to children with an explicit focus on vocabulary instruction produces enhanced outcomes for children.

Shared reading has been the subject of over two decades worth of research (Anderson, Anderson, Lynch, & Shapiro, 2003). Three important meta-analyses have synthesized this work (Bus, van Ijzendoorn, & Pelligrini, 1995; Mol, Bus, de Jong, & Smeets, 2008; National Institute for Literacy, 2008) and found, in general, that parent-delivered shared reading interventions are overall, modestly effective for optimizing young children's emergent literacy skills (in particular, oral language skills) and that results can be found for parent-child shared reading when parents are trained on interactive techniques of shared book reading.

Parents do not; however, spontaneously read in ways that optimize children's language and literacy. Consistently, the literature has shown that parent training to instruct parents on how to adopt interactive reading styles and techniques to build background knowledge and vocabulary enhances the positive effects of shared reading (Reese, Sparks, & Leyva, 2010). However, without training, research has shown that natural reading styles, specifically among low income families, tend to focus on low cognitively demanding interactions such as labeling questions or requesting picture descriptions rather than interactions that require the child to engage in more higher-order thinking processes (Hammer, Nimmo, Cohen, Drahein, & Johnson, 2005).

Thus, further research is needed to determine whether parents trained to deliver interactive techniques during shared reading to explicitly teach target vocabulary words will enhance children's acquisition of target vocabulary words.

Study Purpose

For this study, six mother-preschooler dyads were recruited from an ethnically diverse Community Action Agency full-day Head Start center from a rural county in central Texas. Specifically, eligible children were recruited through the transition classroom at the Early Head Start Center in Bryan, Texas. The child participants in the study ranged in age from 36 to 48 months at pretest with English as the spoken language and were considered low socioeconomic status; a criterion along with age for eligibility into Head Start.

The study utilized a parent-delivered shared reading curriculum intervention designed for the Project Words of Oral Reading and Language Development (Project WORLD) to develop and accelerate vocabulary through strategic and evocative conversations carried out at home after school. After parental consent was obtained for the study, parents who agreed to enroll in the study participated in a training and information session to educate them on their role in the study.

Then, after pretesting on measures of vocabulary knowledge and conceptual thinking, families were randomly assigned to one of two intervention conditions (*Condition 1*: Parent-delivered Project WORLD shared reading intervention; *Condition 2*: Shared reading "books only" condition). Families alternated between the two conditions (*Condition 1* for 3 weeks, then *Condition 2* for three weeks, then *Condition 1* for 3

weeks....) until each family had completed 12 weeks in the study. Two of the six participating families began the intervention early as a form of pilot study.

This study utilized a single case research withdrawal design (Richards, Taylor, Ramasamy, & Richards, 1999) with cumulative frequency (Griffith, 2009) to compare the WORLD intervention and the “books only” condition and demonstrate the effects of the WORLD, parent-delivered shared reading intervention. Researcher developed measures for expressive and receptive vocabulary were administered, two times per week at the same time/day each week to each child participating. In addition to the researcher developed measures, children were assessed on standardized measures of receptive and expressive vocabulary. There were a total possible 27 words that could be learned over the course of the intervention.

The Project WORLD intervention consisted of a parent reading to their child in four-day instructional cycles of 15-25 minute shared book readings using dual text structures (narrative and expository books on alternating days) from 2 specified books (Book 1: First read, Monday; Re-read, Tuesday; Book 2: First read, Wednesday; Re-read Thursday) and following a curriculum that guided the parent into interactive conversations about the target vocabulary words in the books. Books in the Project WORLD intervention condition were organized and presented via science and social studies themes. The shared reading “books only” condition consisted of parents reading the WORLD intervention books to their preschooler (these books are also organized by theme); but during these readings, parents were not provided with the scripted curriculum to follow that guides parents into interactive conversations about the target

vocabulary words in the books. Children were post-tested at the end of the study on measures of vocabulary knowledge and conceptual thinking. Parents were also asked to respond to a social validity questionnaire seeking answers to questions about acceptability and appropriateness of the intervention. They also reported on their opinions of shared reading since the intervention ended. A parent report of shared reading practices as well as acceptability of the intervention was collected at a follow-up.

In order to answer the study's research questions, both visual and statistical analyses including effect size calculation were conducted. Specifically, the research questions are:

- 1) Do the different conditions, Project WORLD parent-delivered shared reading curriculum intervention and the parent-delivered shared reading "books only" (shared reading curriculum taken away) condition produce differential effects on a Head Start preschool child's acquisition of the target *expressive* vocabulary words?
- 2) Do the different conditions, Project WORLD parent-delivered shared reading curriculum intervention and the parent-delivered shared reading "books only" (shared reading curriculum taken away) condition produce differential effects on a Head Start preschool child's acquisition of the target *receptive* vocabulary words?
- 3) Do the different conditions, Project WORLD parent-delivered shared reading curriculum intervention and the parent-delivered shared reading "books only" (shared reading curriculum taken away) condition produce different rates or speeds of vocabulary acquisition for *expressive* vocabulary?
- 4) Do the different conditions, Project WORLD parent-delivered shared reading curriculum intervention and the parent-delivered shared reading "books only" (shared reading curriculum taken away) condition produce different rates or speeds of vocabulary acquisition for *receptive* vocabulary?

CHAPTER II

REVIEW OF THE LITERATURE

Early intervention for literacy skills matters; and it matters most for children who begin school behind their peers in important language and literacy experiences (Coyne et al., 2004). Many diverse children, especially the economically disadvantaged, enter school experiencing large gaps in oral language that adversely affect their ability to read with comprehension in later years (Hart & Risley, 1995). Research documents that children from low-income families, in particular, often experience language input of lower quality with less variation and complexity or sophistication of vocabulary, as well as less exposure to print (Bus, van Ijzendoorn, & Pellegrini, 1995; Neuman, 2006). Further, an increasing number of these children face the extra challenge of entering schools where instruction occurs in a language that differs from the one spoken in their homes. Experts agree that effective early prevention and intervention can, however, mitigate the effects of economic disadvantage with lasting results (Lynch, 2007). Through language rich conversations and interactions, parents have a unique opportunity to prepare their children to benefit from preschool instruction. One notable means of building language rich environments is through evocative conversations around shared book reading.

Before children enter formal schooling, emergent literacy skills are formed through a child's interactions with the adults in their lives (Manz, Hughes, Barnabas, Bracaliello, & Ginsburg-Block, 2010) and through opportunities for exposure to

language and print (National Research Council, 1998). Not all children have; however, access to the same language opportunities. Studies have shown that many children begin Kindergarten already having acquired differing levels of the emergent literacy skills needed for later learning to read and write (e.g., Scarborough, 2001; Hart & Risley, 1995). This marks the beginning of an early language gap for many children. For example, many children enter school with vastly different levels of vocabulary knowledge (Biemiller, 2001). Some children enter school having been exposed to thousands of hours of oral language experiences such as shared reading of story books and other print resources while others have been exposed to almost none of these experiences (Coyne, Simmons, Keme'enui, & Stoolmiller, 2004). Unfortunately, findings of numerous studies reveal that children who begin school behind their peers will likely remain behind their peers throughout their schooling (e.g., Stanovich, 1986; Whitehurst & Lonigan, 2001; Whitehurst & Masetti, 2004). Children who come from economically disadvantaged backgrounds are especially at risk for beginning and remaining behind their peers in school. The research is clear: literacy activities conducted in the more immediate environments especially the home and community, largely influence a child's emergent literacy development with early disparities enduring gaps (Gunn, Simmons, & Kame'enui, 1998).

Although the role of proximal environments on children's language and literacy achievements is well understood, to fully understand their effects we must first know the cognitive abilities young children need to develop to become downstream fluent readers. Preschool research has indicated that early acquisition of these skills is vital to children's

later academic achievement (NELP, 2009). Thus, it is important to understand what emergent literacy is and how and what techniques or interactions may be delivered to foster and accelerate children's acquisition of these foundational abilities. Among the most important of these skills is oral language development; or vocabulary specifically.

Vocabulary Acquisition

Before a child can read in the conventional sense, they must develop emergent literacy skills. So, what is emergent literacy? Emergent literacy generally refers to the “developmental precursors” to writing and reading (Whitehurst & Lonigan, 1998). Emergent literacy can be defined as the attitudes, knowledge, and skills/abilities that provide the developmental foundation for writing and reading and the environments that support these developments (e.g. shared book reading) (Lonigan, 1994; Whitehurst et al., 1998). Emergent literacy assumes that oral language, reading, and writing develop interdependently from an early age via children's exposure to social contexts (Whitehurst & Lonigan, 1998). And the concept of emergent literacy indicates that literacy acquisition can be best described as a developmental continuum that begins early in a child's life, especially in the home, before a child begins formal schooling (Whitehurst & Lonigan, 1998). Emergent literacy is composed of several dimensions including vocabulary.

The National Early Literacy Panel (2004, 2009) describes oral language skills, especially vocabulary, as one of the emergent literacy skill sets that plays an important role in laying the foundation for reading. Included in oral language are vocabulary acquisition skills. This language skill set involves both speaking and listening, or

expressive and receptive language (Dixon, 2004) and the ability to comprehend language through vocabulary knowledge. The building of vocabulary has been found to be a task that is more complex than memorizing a word and definition (Bloom, 2000) and involves anchoring vocabulary to previous experiences with oral language, especially in the home. Vocabulary building involves realizing changes in the connotation of learned vocabulary words and realizing relationships between old and new words and mapping them together so that they may be used again (Landauer & DuMais, 1997). This skill set is important for learning to read because while children may be able to decode a word through the use of phonics, without the understanding of word meanings and related concepts, they will not be able to use words properly or to read (Dixon, 2004).

Preschool represents a window that is critical for the development of vocabulary and is especially important for children with limited opportunities for exposure to rich oral language experiences (Bowman, Donovan, & Burns, 2001). In an analysis of their National Longitudinal Survey of Youth 1979 Cohort analysis of vocabulary growth by age, Farkas and Beron (2004) reported findings including the idea that vocabulary rapidly increases during the preschool ages (0-5). In fact, during the preschool years, children are in a period of learning during which they may be acquiring up to 9-10 new words each day (Hof, 2000 as cited in Hindman, 2008). However, this growth is not equal for preschool aged children across ethnicity and income (Gonzalez, Pollard-Durodola, Simmons, Taylor, Davis, Kim, & Simmons, 2011).

The research clearly indicates that disparities in children's early vocabularies begin soon in life (Hart & Risley, 1995). In particular, Hart and Risley (2003) found that

by age 3, word exposure experiences already vastly differed between children depending on their family's socioeconomic status (i.e., professional-class; working-class; welfare-class). Their research indicated that professional-status families and working-class status families' young children experienced approximately 2,153 words per hour and 1,251 words per hour respectively while children from welfare-class families had experiences with approximately 616 words-per-hour (Hart & Risley, 2003). These findings presage the well documented research showing that deficits in oral language skills, and in particular, vocabulary skills, are associated with academic problems that can persist long-term.

Much research has documented the importance of early vocabulary development for learning to read and for reading comprehension. In general, the National Reading Panel concluded that vocabulary development is extremely important for reading comprehension (NICHD, 2006) and the National Research Council concluded that most problems with reading could be prevented by, among other things, attention to development of children's oral language skills (Snow, Burns, & Griffin, 1998). Importantly, many studies have found positive correlations that exist between differences in oral language skills and differences in later reading skills (e.g., Butler, March, Sheppard, & Sheppard, 1985; Pukulski & Tobin, 1989; Scarborough, 1989). Research has indicated Kindergartener's vocabulary size to be moderately correlated with reading proficiency in the first through third grades ($r = .36$) (Scarborough, 1998). And results from Hart and Risley's (1995) seminal study indicate a strong association between vocabulary at age 3 and reading comprehension at the end of the third grade.

Similarly, Scarborough (2001) found through a meta-analysis that both expressive vocabulary ($r = .45$) and receptive vocabulary ($r = .33$) in Kindergarteners revealed correlations ranging from moderate to strong with subsequent achievement in reading; and Juel (2006) found children's vocabulary knowledge at the beginning of first grade to be predictive of word reading at the end of first grade and reading comprehension in later grades. Thus, the research indicates that children with better developed vocabularies and oral language skills tend to perform better in reading.

It is well documented that the level of development of young children's vocabularies can impact their reading abilities; but, under what conditions does a young child's vocabulary develop? Many studies have been published on vocabulary interventions that seek to correct deficits in vocabulary knowledge.

While there are many different ways to strengthen vocabulary instruction, a key strategy for building vocabulary is through targeted instruction for specific vocabulary words. Research has documented, however, that all vocabulary words are not of equal importance and worthy of investment of instructional time; time spent should be geared toward words that are of high utility and not commonly understood by most of the people who are targeted as learners (Beck, McKeown, & Kucan, 2002; Stahl, 1991). These vocabulary words may be learned from instruction that includes providing opportunities to interact with the vocabulary and reinforcing learning of vocabulary words through methods including discussion and use of vocabulary in multiple contexts (Gonzalez et al., 2011).

While it is understood that purposeful selection and instruction on target vocabulary words impacts vocabulary acquisition (Hirsch, 2003), research has indicated that the learning of vocabulary involves more than targeted lessons. Research has shown that vocabulary does not develop in isolation; vocabulary in the early home environments. Specifically, development occurs in context of background knowledge; and children's background knowledge is an important predictor of how well they will learn vocabulary (Hirsch, 2006). It is well-documented that background knowledge is the foundation of reading comprehension (Hirsch, 2006). Cognitive scientists/researchers agree that reading comprehension requires knowledge about the content or domain that a text refers to and that understanding the text includes integrating this prior knowledge of content/domain with the new vocabulary words so that a "situation model" may be formed (Hirsch, 2006). Constructing this situation model in one's mind is what reading comprehension is (Hirsch, 2006). Building of background knowledge in specific content areas (i.e., science, math, social-studies) through vocabulary development has been supported by research (e.g., Cannon & Karoly, 2007; Landry, 2005; National Association for the Education of Young Children (NAEYC), 2009). While many studies have been published about the benefits of early development of oral language and vocabulary, these studies have not targeted building background knowledge as a means for achieving this development.

In addition to vocabulary acquisition through background knowledge, research suggests that use of selected words in multiple contexts aids in the facilitation of vocabulary learning (NRP, 2000). Some research suggests that, for example, to prepare

children for informational reading in the future and to aid them in becoming familiar with conventions of text, learning through shared book reading should incorporate a variety of book types (both informational texts and traditional/fictional storybooks) (Dickinson, 2001; Duke, 2000; Van Kleeck, 2003). In addition, informational text aids in children's learning of factual information through exposure to a topic or theme and allows teachers and parents to make connections/associations between new vocabulary words, books, and children's lives (Dickinson, 2001; Duke, 2004).

We know that strengths in knowledge of vocabulary can have an impact on further learning. Large advantages in vocabulary and comprehension will appear for children who read well and often (Whitehurst & Lonigan, 2001). This is why an understanding of the prime contexts, especially the home, and conditions under which vocabulary develops is so important. Increasing a child's vocabulary knowledge is especially important for children who come from low socioeconomic status families underscoring the importance of the Home Literacy Environment (HLE).

Home Literacy Environment

As discussed earlier, a child's first language experiences occur in the home. Emergent literacy skills (i.e., oral language skills) then begin within the home literacy environment. The home literacy environment (HLE) may be conceptualized as the family resources and opportunities provided to children, combined with the parental skills, abilities, and dispositions that govern the provision of these opportunities (Burgess, Hecht, and Lonigan, 2002). Several studies have supported the importance of the HLE for the acquisition of emergent literacy skills (i.e., Roberts, Jurgens, &

Burchinal, 2005; Snow, Barnes, Chandler, Goodman, & Hemphill, 1991). For example, a study by Burgess, Hecht, and Lonigan (2002) found that the HLE was significantly related to such emergent literacy skills as phonological sensitivity, word decoding, and oral language in preschool aged children; these effects were strongest when parents engaged in direct teaching and structuring of home literacy/learning environments. Also, Farver et al. (2006) found that parents' direct involvement/teaching and encouragement of activities that were literacy related were associated with oral language skill, especially vocabulary, development and social functioning. Of course, the extent to which literacy activities occur in the home is likely to be dependent on access to literacy related materials (e.g., books). The importance of literacy activities conducted in the home environment has been shown through research. For example, Lonigan and Whitehurst (1998) conducted a study in which effects on emergent literacy skills were found for all conditions, but the largest effects were found for conditions that included parents and the home literacy environment (Lonigan & Whitehurst, 1998). In this study, all participants were low-income and were divided into four conditions: home, school, home-school combined and no-treatment control (Lonigan & Whitehurst, 1998). When compliance with the shared reading intervention was high, the largest effect size (1.19) for receptive vocabulary was found for the home only group.

While it is clear that the HLE plays a role in the acquisition of early literacy skills in young children, some researchers have indicated certain aspects of the HLE that may be particularly more important to the development of these skills. Leseman and de Jong (1998) determined that several characteristics of the preschool HLE can be linked

onto two developmental trajectories: literacy opportunity (possibilities for literacy-related interactions) and the quality of literacy-related guidance.

The first feature, literacy opportunities, includes aspects of the HLE such as number of books in the home and parents' own print exposure (Senechal et al., 1996). Both of these factors were found to be related to children's vocabulary skills (Senechal et al., 1996). Caregiver responsiveness to children's emerging skills and opportunities for frequency of involvement in literacy activities (e.g., shared book reading, visiting museums, etc.) also fall into this category (Anderson & Stokes, 1984; Farver et al., 2006; Purcell-Gates, 1996). Payne, Whitehurst, & Angell (1994) found that increases in children's oral language skills, especially vocabulary, were best predicted by activities that directly involved the child (i.e., frequency of shared book reading, number of children's books in the home, etc.).

The second developmental trajectory that can be linked to several characteristics of the HLE is that of the quality of literacy-related guidance. It includes parent-child interactions and scaffolding of learning. A parental interaction style that supports growth and development is one that is supposed to create motivation for literacy related activities (i.e., book reading) and create opportunities to more frequently engage in book reading (Bus & van Ijzendoorn, 1995). A supportive interaction style is one in which the parent enhances parent-child cooperation in, for example, shared book reading situations which adds to the instructional quality of the experience (de Jong & Leseman, 2001). Instructional quality has to do with interactions about relevant informational topics (de Jong & Leseman, 2001). This instruction is important for vocabulary development, word

knowledge and thus, development of reading comprehension (Kertoy, 1994). The instructional facet has to do with parental facilitation of story understanding through parents' asking questions that scaffold their children's learning (Kertoy, 1994).

It is clear that many aspects of the HLE play a role in emergent literacy, especially vocabulary, skill acquisition. In particular, availability of literacy materials (i.e., books) and parent involvement in and structuring of direct literacy related activities seem to play a large role in the impact of the HLE on children's school readiness.

Arguably, the most well documented of the HLE literacy activities between children and their parents is shared book reading. Much research has indicated that shared book reading is positively related to preschool children's acquisition of literacy skills and motivation for reading (Baker et al., 1997) as well as their early vocabulary development skills (Senechal et al., 1998). The following discussion will focus on shared book reading as a central feature of the HLE that facilitates language skills in young children.

Shared Book Reading

Reading books to children is one of the most popular and enduring methods adults use to support young children's language and literacy development (Bus, van IJzendoorn, & Pellegrini, 1995; Dickinson & Tabors, 2001; Scarborough & Dobrich, 1994). Many studies suggest that access to books and shared reading experiences are critically important to the development of children's emergent literacy (e.g., Bus, Van, IJzendoorn, & Pellegrini, 1995; Dickinson & Smith, 1994). Shared reading of storybooks has been cited as a means for development of vocabulary because the complexity of vocabulary often found in children's books is greater than in most conversations (Hayes

& Ahrens, 1988). And hearing new words in different contexts increases the likelihood that a child will be able to encode new vocabulary words (Lonigan & Whitehurst, 1998). As stated earlier, shared book reading refers to an interactive experience involving reading and learning that takes place between a young child or group of children and an adult (Hindman, Connor, Jewkes, & Morrison, 2008). The term, shared book reading, is an overarching term that encompasses different types of shared reading (Hindman et al., 2008; Lonigan et al., 1999). Dialogic shared reading is one type of shared reading. This type of shared reading involves changes in the ways that adults typically read books to children (Whitehurst & Lonigan, 2001). In dialogic shared reading, the adult becomes an active listener who asks complex questions and through this prompts the child to increase their knowledge about the story being read (Whitehurst & Lonigan, 2001). Shared reading and related interaction provide opportunities for adults and children to engage in textual and extra textual conversations that can assist the child in learning through assistance. Theoretically, shared reading provides opportunities for scaffolding the child's current level of language. Unfortunately, dialogic reading does not target enhancing background knowledge - a goal of the present study.

The most widely accepted conceptual framework underlying shared book reading can be readily seen in Vygotsky (1978) and neo-Vygotskian views of development (Rogoff, 1990; Tharp & Gallimore, 1988). These theories emphasize that social guidance helps children gain opportunities to participate in activities that are beyond their own abilities which will advance their development of language and problem solving skills, among other things (Neuman, 1996). The idea of scaffolding describes the

process by which adults support children's activities of problem-solving and learning through assistance (Bruner, 1983). The zone of proximal development (ZPD) can be described as the difference between a child's "actual" level of development and their "potential" level of development as determined by forms of adult assistance (Vygotsky, 1978). The ZPD emphasizes the fact that development of a child's individual mental processes is mediated by social contexts (Razfar & Gutierrez, 2001).

Rogoff (1990) also touched upon the importance of guided face to face interactions (Rogoff, 1990). Rogoff's (1990) idea of "apprenticeship" helps to frame children as active participants in their literacy environment. The ways in which both the adult and child contribute to the child's literacy development are important for understanding how children move through the ZPD (Bruner, 1983; Rogoff, 1990). Both theories provide a theoretical and conceptual framework for understanding the benefits of shared book reading in language and literacy development.

Shared reading studies have highlighted important applications of principles in Vygotsky's theory (e.g., scaffolding; guided reading; social interactions). These activities appear to strengthen shared book reading effects (Mol et al., 2008). However, research has shown that most parents do not apply these interactive reading techniques without training (e.g., Ahtola & Meimi, 2003; Laasko, Poikkeus, & Lyytinen, 1999). Further, we do not know whether simply reading to children or reading to children with explicit focus on vocabulary instruction produces different outcomes.

Shared reading has been the subject of over two decades worth of research (Anderson, Anderson, Lynch, & Shapiro, 2003). Three important meta-analyses have

synthesized this work. The following reviews of the literature have investigated aspects of shared book reading and relations to young children's literacy skill development (Bus, van Ijzendoorn, & Pelligrini, 1995; Mol, Bus, de Jong, & Smeets, 2008; National Institute for Literacy, 2008). While these reviews have similarities, each also differs to some extent.

A meta-analysis by Bus, van Ijzendoorn, & Pelligrini (1995) reviewed 29 studies (5 unpublished) of parent-preschooler shared book reading. The authors focused on studies that examined shared book reading with preschoolers. Results indicated a link between book reading, emergent literacy and oral language skills. However, there was a wide range in effect size found for these outcomes: (*Cohen's d* = 0.00 (3 studies), *Cohen's d* = 1.51 (1 study)). The authors explained that the design of some of the shared reading studies may be to blame for this range. Sample sizes are often small for book reading studies and so effects must be large so that significance for statistical results can be observed (Bus, van Ijzendoorn, & Pelligrini, 1995). Also, results indicated that while child age did explain some variance between effect sizes (larger effects were found for younger children), SES and type of study (i.e., correlational, longitudinal) did not significantly affect outcomes (Bus, van Ijzendoorn, & Pelligrini, 1995). Effect sizes for the association between book reading and language skills was $d = 0.67$ and the effect size for the association between book reading and emergent literacy was $d = 0.58$.

Next, in a meta-analysis by Mol et al. (2008), 16 home-based book reading studies were examined to investigate the effect of interactive dialogic shared book reading on the receptive and expressive vocabulary development of young children.

Expressive vocabulary yielded a *Cohen's d* effect size of 0.59 and receptive vocabulary yielded a *Cohen's d* effect size of .22. Additionally, findings indicated that age affected outcomes. A greater percentage of the studies with preschoolers (8 of 10) found increases in vocabulary knowledge whereas 3 out of the 6 studies with Kindergarteners found increased vocabulary knowledge; and results indicated that, with regard to the studies analyzed, at-risk children benefited less from shared reading interventions than did children who were not at risk. Results also indicated that increased/strengthened effects of interactive shared book reading can emerge from enhanced conversation between parents and children during reading sessions.

Finally, the National Early Literacy Panel (NELP; National Institute for Literacy, 2008) reviewed 19 shared book reading studies as part of a review of interventions for preschool-aged children on literacy outcomes. Studies included those with participants who were children birth to age 5 in home or center-based settings and studies that were either randomized control trials or quasi-experimental designs and were published between 1985 and 2003. Three of these studies involved parents reading to children. NELP reported that parents reading to young children had a positive impact on oral language skills (average effect size of 0.57 after an outlier study was removed) as well as print knowledge.

The results from these syntheses indicate that parent-delivered shared reading interventions are overall, modestly effective for increasing young children's emergent literacy skills (in particular, oral language skills). Both Bus, van Ijzendoorn, & Pelligrini (1995) and Mol et al. (2008) found results indicating that younger children benefited

more from shared reading than older children. In particular, Mol et al. (2008) indicated that preschoolers seemed to benefit more than Kindergarteners. The results of Mol et al. (2008) and Bus et al. (1995) may speak to the importance of the home literacy environment and the effects of rich learning experiences before formal schooling as their analyses indicated differences between outcomes for age: preschoolers versus Kindergarteners. Results of the meta-analysis by Mol et al. (2008) also indicated that increased/strengthened effects of interactive shared book reading can emerge from enhanced conversation between parents and children during reading sessions. Both the exposure to a story and the active involvement of the child elicited through, for example, parent questions, was found to strengthen/increase the effects of the shared book reading interventions (Mol et al., 2008). For example, in the Mol et al. meta-analysis, studies by Whitehurst, Falco, Lonigan, Fischel, Crone, & Fischel (1988) and Blom-Hoffman, O'Neill-Pirozzi, Volpe, Cutting, & Bissinger (2006) found better outcomes for children when parents were trained in interactive shared reading techniques (i.e., asking open ended questions, etc.) when compared to control groups. Results of the meta-analyses involving parent-child shared reading indicated that results can be found for parent-child shared reading when parents are trained on interventions.

Parents do not; however, spontaneously read in ways that optimize children's language and literacy. Consistently the literature has shown that parent training to instruct parents on how to adopt dialogic reading styles and techniques to build background knowledge and vocabulary enhances the positive effects of shared reading (Reese, Sparks, & Leyva, 2010). Studies have shown that training parents how to read to

their children can produce at least short term changes in oral language skills (e.g., Whitehurst et al., 1988). However, without training, research has shown that natural reading styles, specifically among low income families, tend to focus on low cognitively demanding interactions such as labeling questions or requesting picture descriptions rather than interactions that require the child to engage in more higher-order thinking processes (Hammer, Nimmo, Cohen, Drahein, & Johnson, 2005). For example, studies have found that less educated mothers, in contrast to mothers with higher education, tend to explain details of pictures without involving their child in critical thinking about events in the story (Arnold et al., 1994; Bus & van Ijzendoorn, 1995; Huebner & Melzoff, 2005). Consistently, training to instruct parents on how to adopt dialogic reading techniques has yielded strong effects for interventions (Reese, Sparks, & Leyva, 2010).

Summary

In brief, the research shows that: (a) many diverse children, especially economically disadvantaged, enter school experiencing large gaps in oral language; these gaps adversely affect their academic achievement, and in particular, their ability to read with comprehension in later years (b) vocabulary development is especially important for later reading; and the preschool age is representative of a critical window for vocabulary development (c) despite disparate beginnings for many children, research indicates that parents have a unique opportunity, through language-rich interactions, to enhance their preschooler's vocabulary and oral language skills (d) strategies for building vocabulary: purposeful selection and instruction on target vocabulary words;

building of background knowledge (e) one of the most popular and enduring methods adults (parents) use to support young children's language and literacy development is shared book reading (f) while many studies have been published about the benefits of early development of oral language and vocabulary, these studies have not targeted building background knowledge as a means for achieving this development (g) parents do not spontaneously read in ways that optimize children's language and literacy; but training to instruct parents on how to adopt effective shared reading techniques has yielded strong effects for interventions (f) it is unclear from the research whether simply reading to children or reading to children with explicit focus on extra-textual conversations that build background knowledge around background knowledge and vocabulary with scaffolding instruction and emphasis on content (background knowledge) produces different outcomes.

In short, further research is needed to determine whether parents trained to deliver interactive techniques to explicitly teach target vocabulary words that are organized to be delivered by theme (or specific content area) during shared reading will enhance children's acquisition of the target vocabulary words.

CHAPTER III

METHODS

Participants and Setting

Six mother-preschooler dyads were recruited from ethnically diverse Community Action Agency full-day Head Start centers in a rural county in central Texas. Specifically, eligible children were recruited from the transition classroom at the Early Head Start Center in Bryan, Texas. The child participants in the study ranged in age from 36 to 48 months at pretest and they had to have been capable of speech in order to be tested to determine if they had acquired knowledge of target vocabulary words. All participants were considered low socioeconomic status; a criterion along with age for eligibility into Head Start. All participants recruited for the present study were either Hispanic, Caucasian or African American origin with English as the spoken language. Both male and female preschoolers were recruited with no preference for participation given based on gender. The study was carried out using a parent-delivered, fully-developed, scientifically-based shared reading intervention facilitated at home after school (the WORLD intervention). Parent qualifications for participation in the study were that the participating parent must speak and understand English fluently and read at a minimum fourth grade level.

Families were recruited through a letter sent home with their preschooler from school in Fall 2011 (Appendix A). The letter contained information about the study including time commitments and participant responsibilities. The letter informed parents

of the nature of the intervention; any incentives and their rights. Parents were able to choose to attend the informational meeting held at the time, date, and location indicated on the letter that they received, or, they were able to first choose to contact the principal investigator by telephone with any questions and/or to set up an alternate meeting time. Parents were invited to attend an informational meeting with the lead researcher to sign the consent forms for participation in the project. Aside from signing consent forms, the purpose of the informational meeting was to further describe the project and inform parents of their role. Parents were also informed that some shared reading sessions will be audio recorded for purposes of assessment integrity of treatment implementation (discussed below). During the meeting, the caregiver's reading level was informally assessed via the reading of the first five pages of one of the curriculum books to ensure their suitability for the parent-child shared reading intervention. Parents whose literacy levels precluded read alouds could not be considered for participation in the project.

Parents who agreed to enroll in the study were required to participate in two one-on-one training sessions with the principal investigator. The trainings were conducted in a private meeting room or classroom at the Early Head Start Center in Bryan, Texas. The first training was conducted before the study began and the second was conducted half-way through the study and served as a refresher. Trainings educated parents' on their role in the study. Parents were informed of timelines and duties; and specifically, they were instructed on how to administer the parent-delivered shared reading intervention through live modeling and role-play. The refresher training served to reinforce correct administration of the WORLD curriculum intervention and to address any

questions/concerns that parents or the primary investigator may have had. During these sessions, proficiency of parents' implementation of the intervention was measured (Appendix F). Parent's intervention implementation proficiency must have reflected a 90% mastery level of the curriculum intervention for participation in the study. Also during the training sessions, methods for identifying whether or not parents were implementing the intervention with fidelity were explained to parents. Selected readings were audio-recorded and monitored; if, based on these readings, parents were implementing the intervention with less than 90% fidelity, steps were taken to ensure increased fidelity. Parents were informed that in the event of lack of fidelity, they would receive an additional refresher training on intervention implementation. The refresher training would also be conducted on a one-to-one basis with the parent and lead researcher. If after two extra refresher trainings were implemented with the parent, and based on audio-recordings, the parent was again found to not be implementing the intervention with fidelity, the family would be asked to discontinue participation in the study. Families were also informed that if this happens, those families asked to discontinue participation in the intervention would not receive the curriculum books to keep and monetary payment would not be received by parents once the study had ended. During the training sessions, parents were informed that they must implement the intervention with fidelity: a) in a quiet place, b) not during a meal time, c) 4 times per week (Monday, Tuesday, Wednesday, Thursday), d) audio tape selected readings, e) no intervention will be implemented if the child is sick, f) the shared reading will be done with the preschool child involved in the study (no other siblings should participate). This

shared reading intervention was developed by The Project Words of Oral Reading and Language Development (WORLD) research team and was designed to develop and accelerate vocabulary through strategic and evocative conversation (Gonzalez, Pollard-Durodola, Simmons, Taylor, Davis, Kim, & Simmons, 2011). The curriculum was based on three principles: 1) Building vocabulary through thematically and conceptually related book reading, 2) Bridging vocabulary by integrating informational and narrative texts, 3) Building vocabulary by using explicit instruction in shared book reading.

All participants who completed the study were able to keep the children's books provided to them through the project and were also provided with \$5 for attendance at each of the two mandatory training sessions and \$10 after the study was completed.

Instruments

Demographic Self-Report Questionnaire. A brief researcher-developed demographic questionnaire was created to be used to collect demographic information from parents and was distributed pre-study (Appendix B). Specifically, parents were asked to report their age, ethnicity/race, gender, information about languages spoken in the home, the number of children's books in the home and how many times per week they (the parent) read to their preschool child.

Expressive Vocabulary Test - Second Edition (Kathleen T. Williams, 2007). Child participants were administered the Expressive Vocabulary Test, second edition during pretest and posttest. The EVT-2 is a standardized measure of an individual's expressive vocabulary or the ability to name objects, actions or concepts. The test was used to determine a child's overall level of expressive vocabulary knowledge at pretest

and posttest in comparison to a norm-reference group of the child's same aged peers. The test takes approximately 15 minutes to administer. During this test, a child was asked to name color pictures that reflect concepts/vocabulary and that follow in a developmental sequence. The EVT-2 was co-normed with the PPVT-4. The EVT-2 exhibits good reliability. Internal consistency of the instrument is .94 and .93 on Forms A and B respectively. The test-retest reliability yielded correlations between .94 and .97. Because the EVT-2 has two forms (A and B), comparisons for reliability of individual's scores on both forms of the test were performed yielding coefficients between .83 and .91. The validity data also support the test as an instrument for assessing vocabulary abilities across a range of ages. Calculations of construct validity indicate that the EVT-2 is a valid measure of vocabulary as determined via correlations with other tests that measure the same constructs; construct validity correlations were found between .45 and .80.

Peabody Picture Vocabulary Test – Fourth Edition (Dunn & Dunn, 2007).

Child participants were also administered the Peabody Picture Vocabulary Test (PPVT-IV) at pretest and posttest. The PPVT-IV is a standardized measure of receptive vocabulary and word retrieval. The test was used to determine a child's overall level of receptive vocabulary knowledge at pretest and posttest in comparison to a norm-referenced group of the child's same aged peers. The test takes approximately 10-15 minutes to administer. During the administration of the PPVT-IV, the child was shown color pictures and asked to indicate that they recognize concepts/vocabulary. Reliability of the measure is good. Test-retest reliability yielded correlations between .92 and .96.

Internal consistency was determined using split-half reliability for the normative sample yielding .94 for form A and .95 for form B. Alternate form reliability was found to be between .87 and .93 for the two forms of the measure. Calculations of construct validity indicate that the PPVT-IV is a valid measure of vocabulary; this was determined via correlations with Expressive Vocabulary Test, second edition (EVT-2), Comprehensive Assessment of Spoken Language (CASL), Clinical Evaluation of Language Fundamentals, fourth edition (CELF-4), Group Reading Assessment and Diagnostic Evaluation (GRADE), and Peabody Picture Vocabulary Test, third edition (PPVT-III) (Dunn & Dunn, 2007).

Kaufman Assessment Battery for Children, Second Edition: *Conceptual Thinking* subtest (KABC-II: Kaufman & Kaufman, 2004). Child participants were also administered the *Conceptual Thinking* subtest of the KABC-II during pretest and posttest. The subtest is a part of the KABC-II which is a standardized measure of an individual's cognitive development. This subtest takes about 5 minutes to administer. This subtest was used to measure a child's level of concept knowledge at pretest and posttest in comparison to a norm-reference group of the child's same aged peers. Conceptual thinking refers to an individual's ability to determine how things things/concepts/ideas work together or are connected. During this subtest, the child viewed a set of four or five pictures and identified the picture in the group that does not belong with the others; some of the pictures depict abstract stimuli. The *Conceptual Thinking* subtest exhibits good reliability. Internal consistency of the subtest is .80 for

ages 3-6 and test-retest reliability of the subtest is .55 for ages 3-6 (Kaufman & Kaufman, 2004).

Researcher Developed Vocabulary Measures. Child participants were also administered researcher developed vocabulary measures at pretest and posttest and bi-weekly probes throughout the duration of the study (Appendix C; Appendix D). Measures were developed by the researchers from the Project Words of Oral Reading and Language Development (WORLD) research team who created the parent-delivered shared reading intervention that was used in this study (Gonzalez, Pollard-Durodola, Simmons, Taylor, Davis, Kim, & Simmons, 2011) and adapted for use in this study.

Expressive vocabulary was assessed with a Researcher-Developed Expressive Picture Vocabulary Test (RDEPVT). This measure was designed to gauge vocabulary knowledge taught during the WORLD intervention; and it was developed to approximate the format; execution and scoring of the EVT-2; however, unlike this standardized measure, the RDEPVT only includes the vocabulary words that are targeted by the intervention. For this measure, a test plate with a target word was presented by the examiner and the child was asked to name the target word. Each test plate on the RDEPVT consisted of one vocabulary word that was presented during the WORLD intervention. Reliability and validity was determined via the 18 target vocabulary words that were assessed on the RDRPVT for the WORLD Project. For all administrations, the expressive test was administered before administration of the receptive measure. Alpha coefficients for the RDEPVT were .52 and .77, and split half reliability estimates were .49 and .78 (odd-even test items compared) for pre- and posttest respectively.

Receptive vocabulary was assessed with a Researcher-Developed Receptive Picture Vocabulary Test (RDRPVT). This measure was designed to measure target vocabulary words taught during the WORLD intervention and was developed to approximate the format; execution and scoring of the PPVT-III; however, unlike this standardized measure, the RDRPVT only includes the vocabulary words that are targeted by the intervention. During this test, the target vocabulary word is named by the examiner and the child is asked to point to one of four pictures on a plate that represents the target word. Based on a stratified sampling procedure and selection of 18 target vocabulary words that were used in the intervention, reliability and validity of the RDRPVT measure was determined. Alpha coefficients based on the researcher's sample were .66 and .77; split-half estimates were .68 and .80 (odd-even test items compared) for pre- and posttests, respectively.

For this study, the formatting of the researcher developed measures for expressive and receptive vocabulary stayed the same; but in some instances, words that were not included on the Project WORLD researcher developed measures (described above) needed to be tested. In these instances, the pictures utilized for the testing of these words were those chosen by and used for the teaching of the target vocabulary words for the Project WORLD shared reading curriculum *teacher-delivered*, classroom intervention that was piloted by Project WORLD researchers in 2007.

Familia Inventory (Taylor, 1996). The caregivers/parents completed a commercially available measure of the home literacy environment modified for purposes of this study. Domains measured by the Familia Inventory include: (1) Support by

Extended Family (interactions with extended family members), (2) Family Work and Play (family interactions for work and play), (3) Library Use by Family (frequency of use of community or school library), (4) Parental Modeling and Reading (levels of parental modeling of literacy via engagement in activities, for example, reading), (5) Practical Reading in the Home (family's use of reading and why), (6) Shared Reading of the Family (frequency with which the family reads together), (7) Parental Support of School (parent's interactions with children and school for homework and other activities related to school), (8) Use of Television (levels of family television viewing), (9) Verbal Interactions at Home (importance a family places on talking with children), and (10) Shared Writing by the Family (extent that writing skills/activities are practiced in the family). The items on this measure are arranged on a Likert scale ranging from 0 – never to 5 – daily. Chronbach's alpha reliabilities for a subset of data were reported by Gonzalez et al. (2010) (range: .43-.94) and by Taylor (2007) as cited in Gonzalez et al. (2010) (range: .78-.93).

Parent Reading Belief Inventory (DeBaryshe, 1999). The caregivers/parents completed a commercially available measure of the home literacy environment modified for purposes of this study. This instrument was designed to measure parents' beliefs about the goals and process of reading out loud to young children (DeBaryshe & Binder, 1994). The inventory measures the extent to which parents endorse aspects that are consistent with models that outline environmental influences on language and emergent literacy (Sulzby & Edwards, 1993; Whitehurst & DeBaryshe, 1989). Content scales include as stated in DeBaryshe and Binder (1994) (1) Affect: positive affect associated

with reading, (2) Participation: the value placed on children's active verbal participation when reading aloud, (3) Resources: whether limited resources are an obstacle to reading, (4) Efficacy: views on the parents' role as teachers of school-related skills, (5) Knowledge: whether children acquire moral orientations or practical knowledge from books, (6) Environment: the malleability of language development, and (7) Reading Instruction: the appropriateness of direct reading instruction. The items on this measure are arranged on a Likert scale ranging from 4 - Strongly Agree to 1 - Strongly Disagree. Internal consistency alpha coefficients ranged from .50 to .85 and short-term test-retest reliability was .79 and were reported by DeBaryshe and Binder (1994).

Parent Proficiency of Intervention Implementation. The caregivers/parents completed a measure of proficiency during each of the two trainings (initial training, refresher training) to determine their understanding and mastery of implementation of the WORLD intervention (Appendix F). During a practice reading, the primary investigator checked boxes in a copy of the parent's guideline protocol for each element of the curriculum that the parent completed. Outcomes of this measure were used to determine if additional individualized instruction or guidance was needed for any particular area of the intervention. Parent proficiency ratings of 90% or better were required.

Fidelity of Intervention Implementation. The primary investigator completed a fidelity of implementation measure after each of the required audio recorded parent-child shared reading sessions and during each of the four readings each week, the parent completed a measure of fidelity (Appendix G). This measure was used to ensure fidelity

of the implementation of the intervention. While listening to the audio recorded reading to be evaluated, the primary investigator checked boxes in a copy of the parent's guideline protocol for each element of the curriculum that the parent completed. Parents completed measures of fidelity by checking boxes on the copy of their guideline protocol to indicate whether or not they completed each element of the curriculum for the day. If less than a 90% fidelity rating was found for a shared reading session (either with regard to measures filled out by parents or measures filled out by the primary investigator), the primary investigator placed a telephone call to the parent to discuss ideas for areas for improvement; and if deemed necessary, an individual training meeting was held for additional practice. At the time that a second phone call was made because of findings of less than 90% fidelity rating, a refresher meeting was set to follow the phone call.

Post-Test Questionnaire. A brief researcher-developed questionnaire was created to be used to collect information about parent satisfaction and perceived outcomes (Appendix I) and was distributed during the post-testing period. Specifically, parents were asked to report on things including their satisfaction with the study and asked about changes in shared reading practices.

Follow-Up Questionnaire. A brief researcher-developed questionnaire was created to be used to collect information about parent reading practices after the study had ended and asked for suggestions for improvement regarding the study (Appendix D). This questionnaire was distributed approximately 3 months after the study had ended. Specifically, parents were asked to report on things such as whether they read books to their child each week, and if they do, how often do they read and how many different

books do they read. They were also asked to indicate any improvements that they believed could be made to improve satisfaction with the study and shared-reading curriculum.

Procedures

Recruitment efforts for participants began in Fall 2011 and continued until consent was obtained from 6 families. First, informed consent and parent permission were obtained from parent-child dyads meeting the specified inclusion criteria. Then a demographic questionnaire was filled out by participating parents (Appendix B). Next, after pretesting, families were randomly assigned to one of two intervention conditions (*Condition 1*: Parent-delivered Project WORLD shared reading intervention; *Condition 2*: Shared reading “books only” condition). Families were randomly assigned to a condition based on the order of consent forms received until 6 families agreed to participate. Families alternated between the two conditions (*Condition 1* for 3 weeks, then *Condition 2* for three weeks, then *Condition 1* for 3 weeks....) until each family had completed 12 weeks in the study. Two families began the study early (9 weeks early) as a form of pilot study. At the end of the intervention, parents were given a post-test/social validity measure (Appendix I). The items on this questionnaire asked about acceptability and appropriateness of the intervention in addition to changes in reading practices. Approximately 3 months after the study was complete, a parental report (Appendix D) was completed regarding shared reading practices after the study. This measure asked questions about parents’ shared reading practices since the study ended. Parents were also asked questions about what they liked about the intervention and what they did not

like about the intervention and what changes they would make to it. The project was completed in Fall 2012.

Design

This study utilized a single case research withdrawal design (Richards, Taylor, Ramasamy, & Richards, 1999) with cumulative frequency to compare the two shared reading conditions and demonstrate the effects of the WORLD, parent-delivered shared reading curriculum.

Cumulative frequency entailed the recording and reporting of the total number of target vocabulary words correctly identified during each testing session added to the total number of target vocabulary words correctly identified up to that point for a cumulative record of learned words. The researcher developed measures for expressive and receptive vocabulary (RDEPVT and RDRPVT) were administered two times per week at the same time/day each week to each child participating. Expressive vocabulary measures were always administered before the receptive vocabulary measures during the testing sessions. There were a total possible 27 words that could be learned over the course of the intervention. Intervention probes were developed beginning with week 1 that contained the target words along with a random selection of target words from different weeks of the curriculum. Target words were not introduced into the intervention probes until they were taught through the curriculum to control for testing effects. Each probe contained 15 words total. Each successive week, newly taught words were included in the probe and target words were taken off one-by-one as the most recent target words took their places until all words were assessed and a cumulative

record of words learned was assessed. Because of preschoolers' typically short attention span, to help ensure focus and downplay effects of fatigue, each bi-weekly probe contained only 15 words total. Scoring protocols from the researcher developed measures determined whether or not a child had correctly identified a target vocabulary word. These scores were recorded via cumulative frequency. For example, if during the first testing session of week two of the WORLD intervention, a child responded correctly to the two WORLD intervention target words being tested, two points (one for each vocabulary word) was added to the total number of points for target vocabulary words that the child correctly identified during week 1; and that score was recorded.

There were several guidelines that were followed to determine whether or not a child's definition of a target vocabulary word was correct. When the child was being tested over target receptive vocabulary words, they were asked to point to the picture that identified a word (for example, snow). If the child pointed to the picture that stood for the target vocabulary word in question, the child was given credit for identifying that target vocabulary word. If a child pointed to more than one picture, they were asked "which one do you mean?" If the child continued to point to more than one picture after the query, (even if one of the pictures that they were pointing to was correct), they were not given credit for correctly identifying the target vocabulary word. When the child was being tested over target expressive vocabulary words, they were asked to identify the target vocabulary word that described the picture (i.e., dog, cat, etc.). If the child pointed to the picture that stood for the target vocabulary word in question, the child was given credit for identifying that target vocabulary word. There were several guidelines for

querying that were followed by the examiner to determine whether or not a child would be credited for their identification of a target vocabulary word. First, if a child's response was too general (i.e., they said fruit instead of apple), the examiner would ask the question, "What kind?" If a child gave a response that was too specific (i.e., they said nurse's office instead of building), the examiner would ask the question, "What else is this called?" Additionally, if a child named the action in the picture instead of the object in the picture, (i.e., running instead of dog), the examiner would point to the picture and say, "What is this?" If a child named part of the picture (i.e., the child pointed out McDonald's Restaurant amid many busy buildings and streets instead of saying city), the examiner would circle the entire picture with their finger and say, "What is this?" And, if a child named the wrong part of the item, (i.e., they said tree instead of tree-house), the examiner would point to the arrow on the picture and say, "What is this?" And, if a child named the object for an action in the picture (i.e., cat instead of running), the examiner would say, "What is he/she doing?" and if a child named a single object instead of the group the examiner would say, "What word names all of these?" Queries could be given as many times as needed for each picture.

The withdrawal design allowed for the comparison of two conditions within a single individual (Kennedy, 2005). The withdrawal design refers to the withdrawal of treatment during one or more phases of a study to demonstrate the effects that (in this case, the interactive shared reading curriculum with parent-child shared reading) has on the dependent variable (acquisition of the target vocabulary words) in comparison to parent-child shared reading without the interactive curriculum (Richards, Taylor,

Ramasamy, & Richards, 1999). Alternations occur between no curriculum intervention for a period of time and then introductions of the curriculum intervention for a time period to determine if the dependent variable (levels of vocabulary acquisition) reverses back to the level that it was at when the intervention was not being used (Richards, Taylor, Ramasamy, & Richards, 1999). Alternation between these periods of withdrawal of the intervention take place in order to determine if after several alternations, the data demonstrate a functional relationship between the dependent variable (levels of vocabulary acquisition) and the curriculum intervention (Richards, Taylor, Ramasamy, & Richards, 1999). The change in the dependent variable will be a function of the absence or presence of the intervention (Richards, Taylor, Ramasamy, & Richards, 1999). More than one withdrawal or phase change must take place in order for it to be determined that the study results did not simply happen by chance. For ethical reasons, examiners should end participants in the condition that contributes to the best results for the participant. In withdrawal designs, the treatments/interventions should be counterbalanced (Richards Taylor, Ramasamy, & Richards, 1999). This means that the treatments should be presented randomly and each treatment is presented the same number of times (Alberto & Troutman, 1999). Also, the treatments/interventions should be able to be discriminated between by the participants (Richards, Taylor, Ramasamy, & Richards, 1999). This design can (and will) be used to answer questions of effectiveness of interventions and/or their procedures (Richards, Taylor, Ramasamy, & Richards, 1999).

An advantage of the withdrawal design is that the counterbalancing used in this design will help to control for sequencing effects (Richards, Taylor, Ramasamy, & Richards, 1999). The alternation between intervention and withdrawal of intervention conditions provides direct evidence of prediction, verification, and replication of treatment effects (Richards, Taylor, Ramasamy, & Richards, 1999). Also, the effects of maturation and history are ruled out by demonstration that the change in the dependent variable occurs only with the introduction or withdrawal of treatment (Richards, Taylor, Ramasamy, & Richards, 1999). However, while the withdrawal design does have advantages, notable disadvantages do exist. In particular, if the “intervention” is not easily reversible, contamination may occur. Problems also may arise in that, while withdrawal or introduction of an independent variable is done to show results/effects, the participant may be alternating between a good treatment and one that may not work as well. Another disadvantage is that of resentful demoralization (Cook & Campbell, 1979) which has to do with persons involved in the study becoming resentful/upset during withdrawal or introduction phases (their behaviors may be negatively affected by resentment over having, for example, the treatment withdrawn) (Richards, Taylor, Ramasamy, & Richards, 1999).

Each child participated in the study’s intervention phases for 12 weeks and families alternated every three weeks between the Project WORLD intervention and the Project WORLD “books only” condition (WORLD interactive intervention withdrawn) until 4 phases were completed. Two of the six participants began the study early as a form of a pilot study. The two participants began nine weeks before the remaining four

participants so that results from two phase changes could be documented. After participation of the two participants for 9 weeks (one of the two participants began with the WORLD intervention condition and the second of the two participants began with the shared reading “books only” condition), the remaining four participants began the study. Of the remaining families, two began in the WORLD intervention condition and two families began in the shared reading, reading-as-usual “books only” condition. By the end of the study, families had participated in each intervention condition for the same amount of time. The number of phases was selected based on use of six weeks of the WORLD shared reading intervention and completion of three phase changes for the research design. Phase changes occurred every three weeks to enable visual analysis (data was collected on target vocabulary acquisition two times per week). Data was collected on acquisition of target vocabulary words via cumulative frequency of words identified correctly during twice weekly administration of the researcher-developed measures (RDEPVT and RDRPVT) of target vocabulary acquisition. Each of these measures (RDEPVT and RDRPVT) are made up 15 vocabulary words including the target words for the current testing session and several other randomly selected words. The randomly selected words were part of the WORLD intervention but were not from the weeks of the intervention used in this study. Target words were not included in the weekly probes until they were introduced by the shared-reading. Credit was given for correct identification of target words from the current week and added to credit given for words learned from previous weeks. Each child was tested two times per week (Monday and Wednesday). The Wednesday test included target vocabulary words from Monday and

Tuesday in addition to randomly selected words; and the Monday test examined target words from Wednesday and Thursday in addition to randomly selected words. Each testing period lasted approximately 5-10 minutes per child and took place inside of the child’s Head Start center. Three months after the study was complete, a parental report (Appendix D) was completed regarding shared reading practices after the study.

A visual representation of the design with placeholder data (Figure 1, Figure 2) for receptive vocabulary researcher developed measures can be found below.

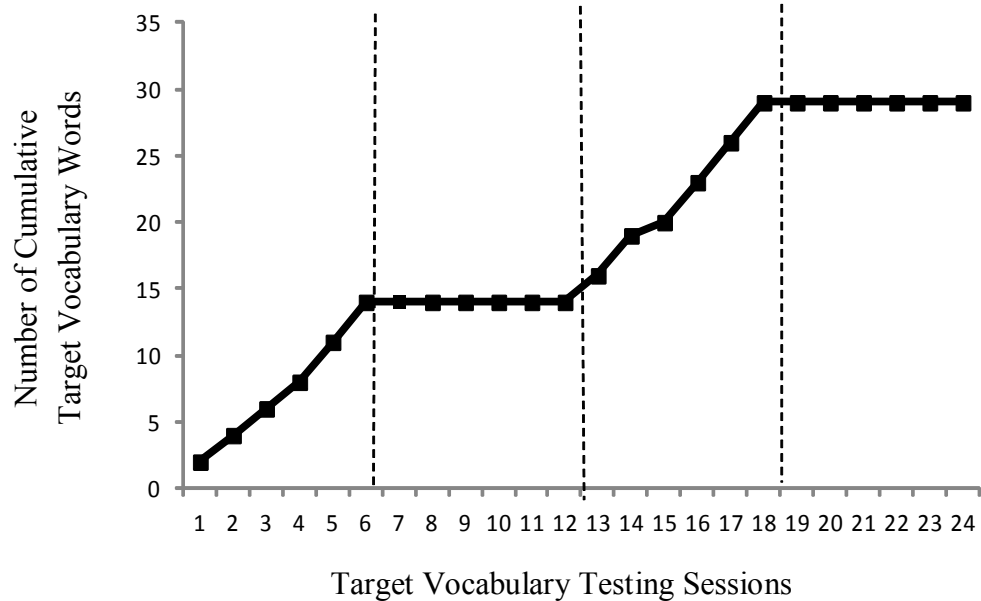


Figure 1 Example graph with placeholder data for one sample participant’s receptive vocabulary (beginning with the WORLD intervention).

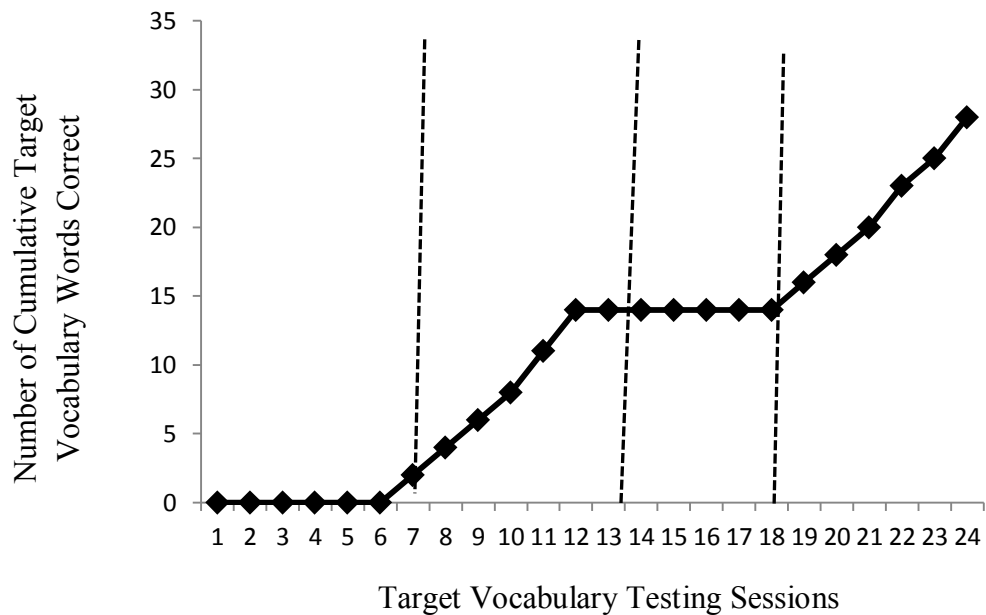


Figure 2 Example graph with placeholder data for one sample participant’s *receptive* vocabulary (beginning with the “books only” condition).

Intervention

The study utilized a parent-delivered shared reading curriculum intervention designed for the Project Words of Oral Reading and Language Development (Project WORLD). Design and piloting of the Project WORLD intervention was funded by a grant from the Institute of Educational Sciences with the U.S. Department of Education. This project was led by researchers from Texas A&M University, Dr. Gonzalez, Dr. Pollard-Durodola and Dr. Simmons. The overall purpose of Project WORLD was to determine evidence of effectiveness for a classroom-based curriculum that was designed

to develop and accelerate background knowledge and vocabulary for preschool aged children at-risk for later reading problems. In tandem with the classroom-based curriculum, a parent-delivered curriculum was developed but was not implemented alone. While findings have been positive for the teacher-delivered version of the curriculum (researcher developed measures for expressive vocabulary ($\eta^2 r = 1.01$) and receptive vocabulary ($\eta^2 r = 1.41$)), the parent-delivered version of the curriculum has not been exclusively tested to determine if this shared reading curriculum and the techniques that it offers to aid children in acquisition of vocabulary will be effective when delivered by parents in the home environment. This study tested only the parent-delivered version of the curriculum intervention.

The parent-delivered curriculum provides explicit teaching of target vocabulary words around concepts/themes of science and social studies. All participating parents were trained (described above) on and given the opportunity to complete the parent-delivered version of the Project WORLD shared reading curriculum. The Project WORLD intervention consists of a parent reading to their child in four-day instructional cycles of 15-25 minute shared book readings using dual text structures (narrative and expository books on alternating days) from two specified books (Book 1: First read, Monday; Re-read, Tuesday; Book 2: First read, Wednesday; Re-read Thursday) and following a curriculum that guides the parent into interactive conversations about the target vocabulary words in the books. Books in the Project WORLD intervention condition are organized and presented via science and social studies themes. The shared reading “books only” condition consists of parents reading the WORLD intervention

books to their preschooler; but they are not provided with the curriculum to follow that guides parents into interactive conversations about the target vocabulary words in the books. During the weeks of each family’s participation in shared-reading for the shared reading “books only” condition, they engaged in activities that were similar to those that they engaged in when implementing the WORLD intervention. For example, readings took place in much the same way that reading did for families participating in the WORLD intervention condition (*Book 1*: First read, Monday; Re-read, Tuesday; *Book 2*: First read, Wednesday; Re-read Thursday). However, parents in the shared reading “books only” condition were asked to read as usual and were not provided with materials to guide them in interactive discussions around the target vocabulary words. Below (Table 1) is a chart outlining the differences/similarities between the two conditions.

Table 1 Outline of Intervention Features

	Project WORLD intervention	Shared reading “books only” condition
Days for Readings	<i>Book 1</i> : Monday and Tuesday <i>Book 2</i> : Wednesday and Thursday	<i>Book 1</i> : Monday and Tuesday <i>Book 2</i> : Wednesday and Thursday
	Project WORLD intervention	Shared reading “books only” condition
Techniques/Interactions	Parents followed a curriculum which guided them to ask specific questions and generate conversations about specific vocabulary words in the books	None specified – parents were asked to “read as usual” to their child
Organization of books	Science and social studies themes (books are the same as those read for the “books only condition)	Science and social studies themes (books are the same as those read for the WORLD intervention)
Intervention length	6 weeks	6 weeks

A list of WORLD intervention books and shared reading “books only” condition books and their target vocabulary words is shown in Table 2. All child participants participated in all pretesting, bi-weekly tests of vocabulary (via researcher developed measures for expressive and receptive vocabulary), and post-testing. Also see project timeline below (Table 3). Three children began in the “books only” condition and three children began in the WORLD intervention condition.

Table 2 Project Outline

Week	Condition (Three of the participants began in the “Books Only” condition and three began in the WORLD Intervention condition)	Book	Target Words	Testing Session
1	<i>Books Only/WORLD</i>	<i>The Adventures of Taxi Dog, 2000</i>	<i>City, Building</i>	<i>1</i>
		<i>Taking a Walk, 1994</i>	<i>Neighbor, Bridge</i>	<i>2</i>
2	<i>Books Only/WORLD</i>	<i>No Jumping on the Bed, 1996</i>	<i>Apartment, Ceiling</i>	<i>1</i>
		<i>The House, 2003</i>	<i>Roof, Basement</i>	<i>2</i>

Table 2 Continued

Week	Condition (Three of the participants began in the “Books Only” condition and three began in the WORLD Intervention condition)	Book	Target Words	Testing Session
3	<i>Books Only/WORLD</i>	<i>Miss Malarkey Doesn't Live in Room 10, 1995</i>	<i>Cafeteria, Gymnasium</i>	<i>1</i>
		<i>Going to School, 2003</i>	<i>Principal, Custodian</i>	<i>2</i>
4	<i>WORLD/Books Only</i>	<i>The Adventures of Taxi Dog, 2000</i>	<i>City, Building</i>	<i>1</i>
		<i>Taking a Walk, 1994</i>	<i>Neighbor, Bridge</i>	<i>2</i>
5	<i>WORLD/Books Only</i>	<i>No Jumping on the Bed, 1996</i>	<i>Apartment, Ceiling</i>	<i>1</i>
		<i>The House, 2003</i>	<i>Roof, Basement</i>	<i>2</i>
6	<i>WORLD/Books Only</i>	<i>Miss Malarkey Doesn't Live in Room 10, 1995</i>	<i>Cafeteria, Gymnasium</i>	<i>1</i>
		<i>Going to School, 2003</i>	<i>Principal, Custodian</i>	<i>2</i>
7	<i>Books Only/WORLD</i>	<i>The Snowy Day, 1962/2011</i>	<i>Snow, Melt</i>	<i>1</i>
		<i>Snow, 2007</i>	<i>Cloud, Snow Flake</i>	<i>2</i>

Table 2 Continued

Week	Condition (Three of the participants began in the “Books Only” condition and three began in the WORLD Intervention condition)	Book	Target Words	Testing Session
8	<i>Books Only/WORLD</i>	<i>Franklin and the Thunderstorm, 1998</i>	<i>Storm, Raindrops, Lightning</i>	<i>1</i>
		<i>Wind, 2003</i>	<i>Spin, Wind, Tornado</i>	<i>2</i>
9	<i>Books Only/WORLD</i>	<i>Moon Bear’s Shadow, 2000</i>	<i>Shadow, Sky</i>	<i>1</i>
		<i>Light: What Living Things Need, 2006</i>	<i>Light, Shade, Dark</i>	<i>2</i>
10	<i>WORLD/Books Only</i>	<i>The Snowy Day, 1962/2011</i>	<i>Snow, Melt</i>	<i>1</i>
		<i>Snow, 2007</i>	<i>Cloud, Snow Flake</i>	<i>2</i>
11	<i>WORLD/Books Only</i>	<i>Franklin and the Thunderstorm, 1998</i>	<i>Storm, Raindrops, Lightning</i>	<i>1</i>
		<i>Wind, 2003</i>	<i>Spin, Wind, Tornado</i>	<i>2</i>
12	<i>WORLD/Books Only</i>	<i>Moon Bear’s Shadow, 2000</i>	<i>Shadow, Sky</i>	<i>1</i>
		<i>Light: What Living Things Need, 2006</i>	<i>Light, Shade, Dark</i>	<i>2</i>

Table 3 Project Timeline

Week	Activity
	<p><u>Consent Procedures and Pretesting</u></p> <ul style="list-style-type: none"> • Information presented and information form given to parent • Determined eligibility of parent for study based on reading level (parents must read at or above a 4th grade reading level) • Consent form read and explained to parent; signed by parent; Parent permission obtained for child to participate <p><i>Pretest - Parent Measures</i></p> <ul style="list-style-type: none"> • Demographic Self-Report Questionnaire <p><i>Pretest - Child Measures</i></p> <ul style="list-style-type: none"> • EVT-2 • PPVT-IV • KABC-II (<i>Conceptual Thinking</i> subtest) • Researcher developed expressive vocabulary and receptive vocabulary measures for all target vocabulary words
	<p>Training: Parent training on the curriculum took place at the Early Head Start Center (Bryan, Texas). A measure of parent proficiency was completed during this training.</p> <hr/> <p><i>Training Outline</i></p> <ul style="list-style-type: none"> • Introduction: Shared reading to promote vocabulary development • What is the parent’s role in the project? • What is the child’s role in the project? • Timelines • Introduction: Project WORLD parent-delivered shared reading intervention • Researcher modeling Project WORLD curriculum administration • Parents role-playing Project WORLD curriculum administration; feedback

Table 3 Continued

Week	Activity
Week 1-3	<p><i>Begin:</i> 2 participants began Project WORLD intervention condition and 2 participants began shared reading “books only” condition. After three weeks, the participants switched conditions. (2 participants began the intervention 9 weeks early as a form of pilot study)</p> <p>All families were provided 2 books per week and instructed to read 4 times per week (<i>Book 1:</i> Read - Monday and Tuesday; <i>Book 2:</i> Read - Wednesday and Thursday). Families were asked to audio-record selected readings.</p> <p>Families assigned to the Project WORLD intervention condition followed the curriculum; families assigned to the “books only” condition read the assigned books “as usual.”</p>
Weeks 4-6	<p><i>Alternate:</i> The participants who began in the Project WORLD intervention condition participated in the shared reading “books only” condition and the participants who began in the “books only” condition participated in the Project WORLD intervention condition.</p> <p>All families were provided 2 books per week and instructed to read 4 times per week (<i>Book 1:</i> Read - Monday and Tuesday; <i>Book 2:</i> Read - Wednesday and Thursday). Families were asked to audio-record selected readings.</p> <p>Families assigned to the Project WORLD intervention condition followed the curriculum; families assigned to the “books only” condition read the assigned books “as usual.”</p>
Week 7-9	<p><i>Alternate:</i> The participants who were in the Project WORLD intervention condition for weeks 4-6 participated in the shared reading “books only” condition and the participants who were in the “books only” condition for weeks 4-6 participated in the Project WORLD intervention condition.</p> <p>All families were provided 2 books per week and instructed to read 4 times per week (<i>Book 1:</i> Read - Monday and Tuesday; <i>Book 2:</i> Read - Wednesday and Thursday). Families were asked to audio-record selected readings.</p> <p>Families assigned to the Project WORLD intervention condition followed the curriculum; families assigned to the “books only” condition read the assigned books “as usual.”</p>

Table 3 Continued

Week	Activity
Week 10-12	<p><i>Alternate:</i> The participants who were in the Project WORLD intervention condition for weeks 7-9 participated in the shared reading “books only” condition and the participants who were in the “books only” condition for weeks 7-9 participated in the Project WORLD intervention condition.</p> <p>All families were provided 2 books per week and were instructed to read 4 times per week (<i>Book 1</i>: Read - Monday and Tuesday; <i>Book 2</i>: Read - Wednesday and Thursday). Families were asked to audio-record selected readings.</p> <p>Families assigned to the Project WORLD intervention condition followed the curriculum; families assigned to the “books only” condition read the assigned books “as usual.”</p>
Week 13	<p><u>Posttesting</u></p> <p><i>Posttest – Parent Measures</i></p> <ul style="list-style-type: none"> • Intervention Satisfaction/Feedback Questionnaire <p><i>Posttest - Child Measures</i></p> <ul style="list-style-type: none"> • PPVT-IV • EVT-2 • KABC-II (<i>Conceptual Thinking</i> subtest) • Researcher developed expressive vocabulary and receptive vocabulary measures for all target vocabulary words
Follow-Up	<p><i>Parent Measures</i></p> <ul style="list-style-type: none"> • Parent-Child Reading Practices Researcher Developed Questionnaire • Parent Reading Belief Inventory • Familia Inventory

Research Question and Anticipated Findings: Working-Hypothesis

- 1) Do the different conditions (Project WORLD parent-delivered shared reading curriculum intervention and the parent-delivered shared reading “books only” condition) produce differential effects on a Head Start preschool child’s acquisition of the target *expressive* vocabulary words?

Hypothesis One (H1): Better outcomes (more words identified correctly) for expressive vocabulary words will be found for participation in the Project WORLD shared reading curriculum intervention condition than for the parent-child shared reading “books only” condition.

- 2) Do the different conditions (Project WORLD parent-delivered shared reading curriculum intervention and the parent-delivered shared reading “books only” condition) produce differential effects on a Head Start preschool child’s acquisition of the target *receptive* vocabulary words?

Hypothesis Two (H2): Better outcomes (more words identified correctly) for receptive vocabulary words will be found for participation in the Project WORLD shared reading curriculum intervention condition than for the parent-child shared reading “books only” condition.

- 3) Do the different conditions, Project WORLD parent-delivered shared reading curriculum intervention and the parent-delivered shared reading “books only” (shared reading curriculum taken away) condition produce different rates or speeds of vocabulary acquisition for *expressive* vocabulary?

Hypothesis Three (H3): Better outcomes (faster rate of acquisition of target vocabulary words) for expressive vocabulary words will be found during participation in the Project WORLD shared reading curriculum intervention condition than for the parent-child shared reading “books only” condition.

- 4) Do the different interventions, Project WORLD parent-delivered shared reading curriculum intervention and the parent-delivered shared reading “books only” (shared reading curriculum taken away) condition produce different rates or speeds of vocabulary acquisition for *receptive* vocabulary?

Hypothesis Four (H4): Better outcomes (faster rate of acquisition of target vocabulary words) for receptive vocabulary words will be found during participation in the Project WORLD shared reading curriculum intervention condition than for the parent-child shared reading “books only” condition.

Data Analysis

In order to answer the research questions, statistical and visual analyses were conducted. Descriptive data for the sample including: demographic data, parent reading beliefs, home literacy environment, and pre and posttest performance were presented. Then, for each phase of the design, data was summarized by calculations of the mean, median, and standard deviation. A visual analysis of the data graphed was completed to determine if either intervention had led to acquisition of target vocabulary words. Visual analysis was based on observations of trend, intercept gap, mean, slope, and level. In order to enhance visual analysis, mean lines were applied to the data. Mean lines were used to visually examine and compare mean levels of data. Tau-U non-overlap analyses were also conducted. Tau-U is a measure of the amount of separation between two sets of data (Parker et al., 2010) and is utilized as the effect size (Parker, Vannest, & Davis, 2011). A Tau-U nonoverlap percentage can indicate whether an intervention is producing some change in acquisition of the target vocabulary words. A p value and a 90% confidence interval were reported for Tau nonoverlap. Data trends were estimated

by Kendall's tau. The results of Kendall's Tau calculations do not represent slope. Results for Kendall's Tau can indicate whether data in the intervention phases go up or down over time (for this study, it indicated increases in acquisition of target vocabulary words). Calculations were completed and graphs used were generated in WinPepi. In addition, in order to determine whether there were differences between the means and slopes of the baseline and intervention phases, statistical inference tests were conducted. P values were reported to determine whether the difference amount could have occurred by chance alone. And, effect sizes for the comparisons were reported as a standardized means for comparison. Confidence intervals were also reported to determine where the true score may lie because measurement error may take away the ability to measure the true score.

CHAPTER IV

RESULTS

Descriptive Overview

Using small-n methodology, six preschool-aged children (pseudo names used) participated in 12 weeks of a parent-delivered shared reading intervention called Words of Oral Reading and Language Development (WORLD). Using researcher-developed probes of target content-related expressive and receptive vocabulary, data were collected by the lead researcher and a trained undergraduate assistant at participating Head Start centers located in a Southwest state. A total of 24 data points across four phases of the experiment (ABAB) for expressive and receptive vocabulary probes, respectively, were collected per child. Six data points were collected within in each phase. Vocabulary acquisition was determined in terms of frequency of words learned through the slope of the line for each child for both expressive and receptive vocabulary. All participants were considered low-income as established by Head Start criteria. All six households spoke English as a primary language and four spoke Spanish as a second language. All children were between the ages of 3 and 4 years old at the start of the study.

Fidelity and Reliability

Fidelity of Implementation. Intervention fidelity data provides information about whether an intervention is being implemented as planned or as it should be. Intervention fidelity (also referred to in the literature as treatment integrity or program fidelity) has been defined in several ways with the dimension of adherence used most

often. Further, research shows that high intervention fidelity can be associated with significant positive outcomes and higher effect sizes (Durlak & Dupre, 2008; Webster-Stratton et al., 2011); thus the adherence to accuracy of implementation increases the chances of intervention success and benefits for clients. In the present study, intervention fidelity was measured in two ways.

Specifically, in the first method participating parents self-recorded one weekly pre-identified parent-child shared reading session (parents were provided with a mini recorder, weekly schedule and monthly calendar with identified days to audio record. The curriculum pictured was developed by the researchers from the Project Words of Oral Reading and Language Development (WORLD) research team who created the parent-delivered shared reading intervention that was used in this study (Gonzalez, Pollard-Durodola, Simmons, Taylor, Davis, Kim, & Simmons, 2011).

According to the coded audio-tapes, parents delivered the curriculum with 98% accuracy, a high percentage of treatment adherence. Following each audio-tape fidelity check, parents were called and praised for quality implementation, coaching, and error correction procedures.

In a second method, parents used a lesson-by-lesson, self-administered, simple, clear and concise fidelity checklist across all shared reading sessions. Parents placed a check mark in the box next to each intervention feature that they completed. Results of this fidelity measure indicated that parents implemented the intervention with a high degree of fidelity as parents reported that they followed features 99% of the time.

In order to participate, parents had to demonstrate at minimum 90% mastery on practice administrations (including reading the storybook with the curriculum and utilizing the fidelity checklist) during the initial training. To ensure continued accuracy and continuity, half-way through the study, parents were exposed to a refresher training conducted by the lead researcher. The refresher training consisted of a model-lead-test approach conducted with ongoing practice by the parent on the curriculum. Procedures of the study were also reviewed (e.g., adherence, timelines, etc.). Throughout the training session, clarifications were made and questions were addressed. All parents completed the readings during the training session with 90% fidelity, so they were not required to attend an additional refresher training.

Reliability. Inter-rater reliability was established by the lead researcher and a practicum student in two domains: 1) scoring of expressive and receptive vocabulary probes, and 2) fidelity coding of the parent self-administered audio-recordings. For researcher-developed vocabulary measures, inter-rater reliability was examined both prior to the study and then, to limit drift, throughout the rest of the study. The acceptable level for reliability was set at 80%. According to Barrett (2001), values greater than 0.70 are usually acceptable for consistency estimates of inter-rater reliability. If the reliability rate was not greater than or equal to 80%, re-training for inter-rater reliability would be scheduled. Inter-rater reliability throughout the study was greater than 80%, so no additional trainings needed to be scheduled.

Vocabulary probes. Inter-rater training occurred prior to the beginning of the study. Trainings consisted of completion of practice vocabulary probes. Also included

in this training was information on best practices in testing (e.g., establishing rapport), clarification on how to query unclear child responses and a discussion of concerns or issues that arose during practice sessions (e.g., what score should be given if a child states the correct word, but in plural form, etc.). To establish pre-intervention testing reliability, one undergraduate student acted as a mock-examinee and the lead researcher and a second undergraduate student examiner took turns administering the probes to the mock undergraduate examinee (the undergraduate student and the lead researcher each administered an expressive vocabulary probe and a receptive vocabulary probe) and they both scored all administrations. Mastery was set at 100%.

Then, in order to continually assess reliability of the vocabulary probe scoring between inter-scorers throughout the study, double-coding of the administration of the researcher-developed expressive and receptive target vocabulary probes (see Appendix C and D for sample probes) took place at the end of the first phase, third phase, and fourth phases, respectively. The number of testing sessions across the curriculum to test inter-rater reliability was set at 20%. Gwet (2008) suggests that this percentage can be determined by the researcher depending on sample size. Twenty percent of vocabulary probes were double-coded meaning that for this percentage of probes, either the lead researcher or practicum student administered the probe to a participating student and both scored the student response. In total, 30 probes were double-coded.

Audio recordings. Inter-rater reliability was established prior to the study and then double-coding of the audio-recordings took place throughout the study at the end of the first phase, third phase, and fourth phases, respectively in order to assess reliability

of the vocabulary probe scoring throughout the study. Inter-rater reliability trainings took place prior to the beginning of the study and consisted of completion of coding practice of audio-recordings. Also included was a discussion of questions as they arose during practice sessions. The target number of recordings double-coded for inter-rater reliability was 20%. Twenty percent of audio-recordings were double-coded meaning that for this percentage, 15 audio-recordings were double-coded. Both the lead researcher and practicum student coded the selected recordings.

Reliability Calculations. Reliability calculations for both the vocabulary probes and the audio-recordings were completed for the inter-rater reliability established prior to the study and the inter-rater reliability assessment that took place throughout the study. First, reliability for “percent of agreement for occurrences” was calculated. This was done by calculating the percent agreement for each rater, and then averaging them. Also calculated was Kappa-unweighted to address outcomes occurring by chance. Kappa was calculated using the Cohen’s Kappa calculator feature on the Vassar College website. Pre-intervention training reliability for coding of the audio-recordings was 100% agreement of occurrence and 100% Cohen’s Kappa. The tables (4-15) below outline reliability for vocabulary coding and audio-tape recording coding for each child.

Table 4 Reliability, Vocabulary Probes, Child 1 - John

Probe	Inter-rater Percent Agreement of Occurrence	Cohen's Kappa
<u>Reliability Calculated Throughout the Study</u>		
Expressive Vocabulary Coding/1	100%	100%
Expressive Vocabulary Coding/2	94%	94%
Expressive Vocabulary Coding/3	100%	100%
<i>Mean Reliability Calculated Throughout the Study</i>	98%	98%
<u>Reliability Calculated Throughout the Study</u>		
Receptive Vocabulary Coding/1	100%	100%
Receptive Vocabulary Coding/2	100%	100%
Receptive Vocabulary Coding/3	100%	100%
<i>Mean Reliability Calculated Throughout the Study</i>	100%	100%

Table 5 Reliability, Audio-Recording Coding, Child 1 - John

Probe	Inter-rater Percent Agreement of Occurrence	Cohen's Kappa
<u>Reliability Calculated Throughout the Study</u>		
Audio Tape Coding/1	100%	100%
Audio Tape Coding/2	100%	100%
Audio Tape Coding/3	100%	100%
<i>Mean Reliability Calculated Throughout the Study</i>	100%	100%

Table 6 Reliability, Vocabulary Probes, Child 2 - Jacob

Probe	Inter-rater Percent Agreement of Occurrence	Cohen's Kappa
<u>Reliability Calculated Throughout the Study</u>		
Expressive Vocabulary Coding/1	100%	100%
Expressive Vocabulary Coding/2	100%	100%
Expressive Vocabulary Coding/3	100%	100%
<i>Mean Reliability Calculated Throughout the Study</i>	100%	100%
<u>Reliability Calculated Throughout the Study</u>		
Receptive Vocabulary Coding/1	100%	100%
Receptive Vocabulary Coding/2	100%	100%
Receptive Vocabulary Coding/3	100%	100%
<i>Mean Reliability Calculated Throughout the Study</i>	100%	100%

Table 7 Reliability, Audio-Recording Coding, Child 2 – Jacob

Probe	Inter-rater Percent Agreement of Occurrence	Cohen's Kappa
<u>Reliability Calculated Throughout the Study</u>		
Audio Tape Coding/1	90%	86%
Audio Tape Coding/2	100%	100%
Audio Tape Coding/3	100%	100%
<i>Mean Reliability Calculated Throughout the Study</i>	97%	95%

Table 8 Reliability, Vocabulary Probes, Child 3 – Cameron

Probe	Inter-rater Percent Agreement of Occurrence	Cohen’s Kappa
<u>Reliability Calculated Throughout the Study</u>		
Expressive Vocabulary Coding/1	100%	100%
Expressive Vocabulary Coding/2	100%	100%
Expressive Vocabulary Coding/3	100%	100%
<i>Mean Reliability Calculated Throughout the Study</i>	100%	100%
<u>Reliability Calculated Throughout the Study</u>		
Receptive Vocabulary Coding/1	100%	100%
Receptive Vocabulary Coding/2	100%	100%
Receptive Vocabulary Coding/3	100%	100%
<i>Mean Reliability Calculated Throughout the Study</i>	100%	100%

Table 9 Reliability, Audio-Recording Coding, Child 3 - Cameron

Probe	Inter-rater Percent Agreement of Occurrence	Cohen’s Kappa
<u>Reliability Calculated Throughout the Study</u>		
Audio Tape Coding/1	100%	100%
Audio Tape Coding/2	100%	100%
Audio Tape Coding/3	100%	100%
<i>Mean Reliability Calculated Throughout the Study</i>	100%	100%

Table 10 Reliability, Vocabulary Probe, Child 4 – Clide

Probe	Inter-rater Percent Agreement of Occurrence	Cohen's Kappa
<u>Reliability Calculated Throughout the Study</u>		
Expressive Vocabulary Coding/1	100%	100%
Expressive Vocabulary Coding/2	100%	100%
Expressive Vocabulary Coding/3	100%	100%
<i>Mean Reliability Calculated Throughout the Study</i>	100%	100%
<u>Reliability Calculated Throughout the Study</u>		
Receptive Vocabulary Coding/1	100%	100%
Receptive Vocabulary Coding/2	100%	100%
Receptive Vocabulary Coding/3	100%	100%
<i>Mean Reliability Calculated Throughout the Study</i>	100%	100%

Table 11 Reliability, Audio Recording Coding, Child 4 – Clide

Probe	Inter-rater Percent Agreement of Occurrence	Cohen's Kappa
<u>Reliability Calculated Throughout the Study</u>		
Audio Tape Coding/1	100%	100%
Audio Tape Coding/2	100%	100%
Audio Tape Coding/3	100%	100%
<i>Mean Reliability Calculated Throughout the Study</i>	100%	100%

Table 12 Reliability, Vocabulary Probes, Child 5 - Mary

Probe	Inter-rater Percent Agreement of Occurrence	Cohen's Kappa
<u>Reliability Calculated Throughout the Study</u>	Inter-rater Percent Agreement of Occurrence	
Expressive Vocabulary Coding/1	100%	100%
Expressive Vocabulary Coding/2	100%	100%
Expressive Vocabulary Coding/3	100%	100%
<i>Mean Reliability Calculated Throughout the Study</i>	100%	100%
<u>Reliability Calculated Throughout the Study</u>		
Receptive Vocabulary Coding/1	100%	100%
Receptive Vocabulary Coding/2	100%	100%
Receptive Vocabulary Coding/3	100%	100%
<i>Mean Reliability Calculated Throughout the Study</i>	100%	100%

Table 13 Reliability, Auditory Recording Coding, Child 5 - Mary

Probe	Inter-rater Percent Agreement of Occurrence	Cohen's Kappa
<u>Reliability Calculated Throughout the Study</u>		
Audio Tape Coding/1	100%	100%
Audio Tape Coding/2	100%	100%
Audio Tape Coding/3	100%	100%
<i>Mean Reliability Calculated Throughout the Study</i>	100%	100%

Table 14 Reliability, Vocabulary Probe, Child 6 – Laura

Probe	Inter-rater Percent Agreement of Occurrence	Cohen's Kappa
<u>Reliability Calculated Throughout the Study</u>		
Expressive Vocabulary Coding/1	100%	100%
Expressive Vocabulary Coding/2	100%	100%
Expressive Vocabulary Coding/3	100%	100%
<i>Mean Reliability Calculated Throughout the Study</i>	100%	100%

Table 15 Reliability, Audio Recording Coding, Child 6 - Laura

Probe	Inter-rater Percent Agreement of Occurrence	Cohen's Kappa
<u>Reliability Calculated Throughout the Study</u>		
Audio Tape Coding/1	100%	100%
Audio Tape Coding/2 19 and 20	90%	86%
Audio Tape Coding/3	100%	100%
<i>Mean Reliability Calculated Throughout the Study</i>	97%	95%

Expressive Vocabulary Target Word Acquisition, Shared Reading Intervention Versus Reading-As-Usual “Books Only” Condition

Child 1 – John. John obtained a standard score of 93 on the EVT-2 at pretest which means that he performed as well as or better than 32% of his same aged peers on this test. He obtained a standard score of 96 on the post-test suggesting that he performed as well as or better than 39% of his same aged peers. On the Conceptual Thinking subtest from the KABC-II, John obtained a standard score of ten at pretest and at posttest, he obtained a standard score of eight. Standard scores ranged from one to nineteen on this subtest of the KABC-II. This subtest was administered so that it’s outcomes could be compared with scores on the standardized vocabulary measures and performance on the shared-reading intervention to determine if any patterns resulted. Hirsch (2006) found that people understand new information by relating it to what they already know. Thus, conceptual thinking and vocabulary development might share a correlational relationship.

Visual analysis of John’s graphed data was used to determine whether the intervention had resulted in incremental increases in learned expressive vocabulary (Figure 3). The visual analysis was based on observations of trend, intercept gap, mean, slope, and level. First, in order to enhance visual analysis, mean lines were applied to the data. Mean lines were used to visually examine and compare mean levels of data (Morgan & Morgan, 2009).

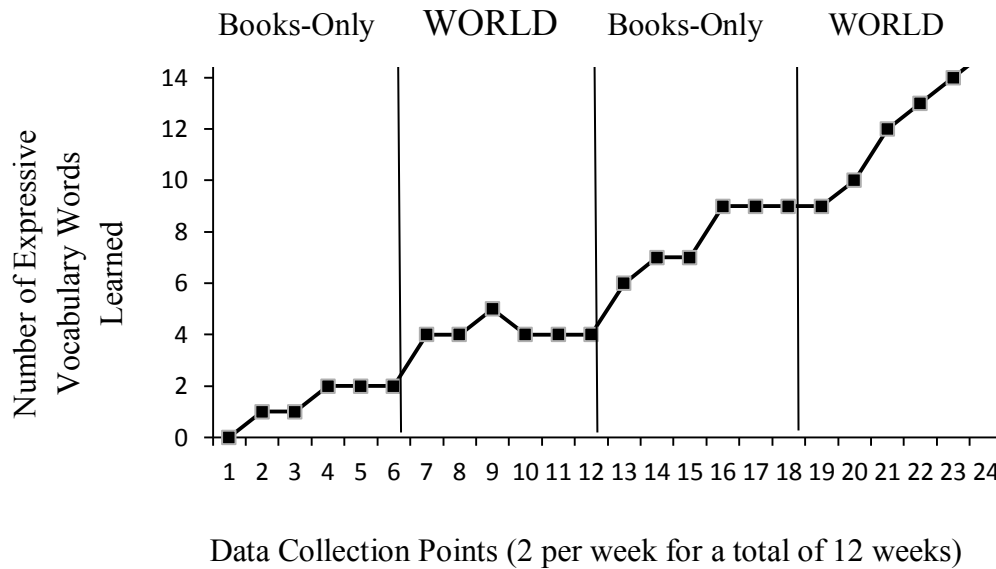


Figure 3 Child 1 – John.

Next, Tau-U nonoverlap analyses were conducted. Results were recorded on Table 16. Tau-U is a measure of the amount of separation between two sets or “clouds” of data (Parker, Vannest, Davis, & Sauber, 2011).

Analyses revealed for phase 1 and 2, a Tau of 1 indicating that 100% of the data between phases 1 and 2 were non-overlapping. The 2-sided p value indicates that there is a < .01 percent chance that these results were obtained by chance alone. A Tau-U nonoverlap percentage of .60 or less usually indicates minimal to no change. Thus, a nonoverlap score of 100% indicates that this phase of the intervention is producing change in John’s expressive vocabulary acquisition between phase 1 and phase 2.

Analyses revealed for phase 2 and 3, a Tau of 1 indicating that 100% of the data between these two phases were non-overlapping. The 2-sided p value indicates that there is a < .01 percent chance that these results were obtained by chance alone. A nonoverlap score of 100% indicates that this phase of the intervention is producing change in John's expressive vocabulary acquisition between phase 2 and phase 3.

Analyses revealed for phase 3 and 4, a Tau of .92 indicating that 92% of the data between these two phases were non-overlapping. The 2-sided p value indicates that there is a < .01 percent chance that these results were obtained by chance alone. A nonoverlap score of 100% indicates that this phase of the intervention is producing change in John's expressive vocabulary acquisition between phase 3 and phase 4. Table 16 below provides a summary of the Tau-U nonoverlap analyses.

Table 16 John, Expressive Vocabulary, Tau-U Nonoverlap

	Tau nonoverlap	Mean phase a	Median phase a	Mean phase b	Median phase b	2-tailed p value
Phase 1a and 2b	1	1.33	1.5	4.67	5.0	P<.01
Phase 2a and 3b	1	4.67	5.0	7.83	8.0	P<.01
Phase 3a and 4b	.92	7.85	8.0	12.17	12.5	P<.01

Trend was also estimated via Kendall's Tau (Parker, 2011) for each of the four phases of the data. Results for Kendall's Tau for expressive vocabulary for phase 1 indicated that 73% of data in phase 1, 53% of data in phase 2, 73% of data in phase 3, and 100% of data in phase 4 go up over time for learned expressive vocabulary. The figures below (Figures 4, 5, 6 and 7) (generated in WinPepi) illustrate Kendall's Tau for each of the four phases of the data.

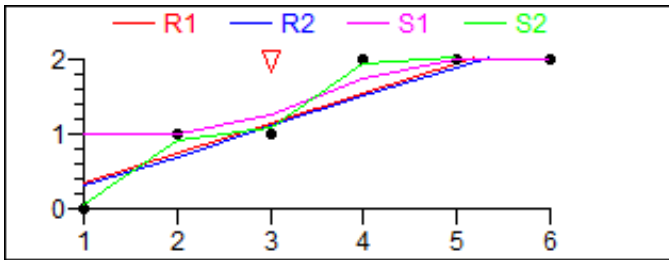


Figure 4 Kendall's Tau – Trendedness – John, Expressive, Phase 1.

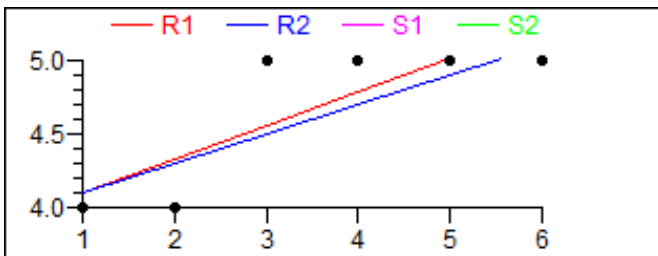


Figure 5 Kendall's Tau – Trendedness – John, Expressive, Phase 2.

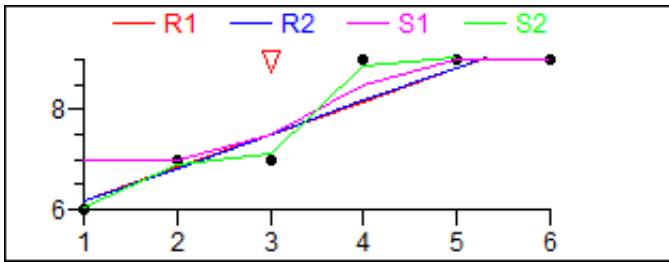


Figure 6 Kendall's Tau – Trendedness – John, Expressive, Phase 3.

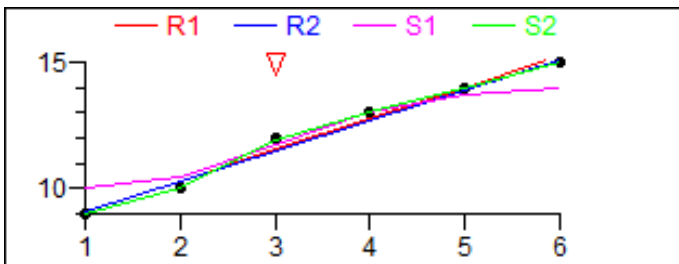


Figure 7 Kendall's Tau – Trendedness – John, Expressive, Phase 4.

Overall, Tau nonoverlap indicated some success of the intervention in increasing acquisition of the target expressive vocabulary words for John. Trendedness suggested that for any given phase, between 53% and 100% of the data (acquisition of expressive vocabulary) increased over time. Visual Analysis through the use of mean lines suggested an increase in expressive vocabulary acquisition overall. Based on Visual and

Statistical Analysis, it appears that the intervention was successful at increasing John's acquisition of the target expressive vocabulary words.

Child 2 – Jacob. Jacob obtained a standard score of 96 on the EVT-2 when this assessment was given at pretest which suggests that he performed as well as or better than 39% of his same aged peers on this test. He obtained a standard score of 100 on the posttest suggesting that he performed as well as or better than 50% of his same aged peers. On the administration of the Conceptual Thinking subtest from the KABC-II, Jacob obtained a standard score of eleven and at posttest he obtained a standard score of eleven.

Visual analysis of Jacob's graphed data was used to determine whether the intervention had resulted in incremental increases in learned expressive vocabulary (Figure 8). The visual analysis was based on observations of trend, intercept gap, mean, slope, and level. First, in order to enhance visual analysis, mean lines were applied to the data. Mean lines were used to visually examine and compare mean levels of data (Morgan & Morgan, 2009).

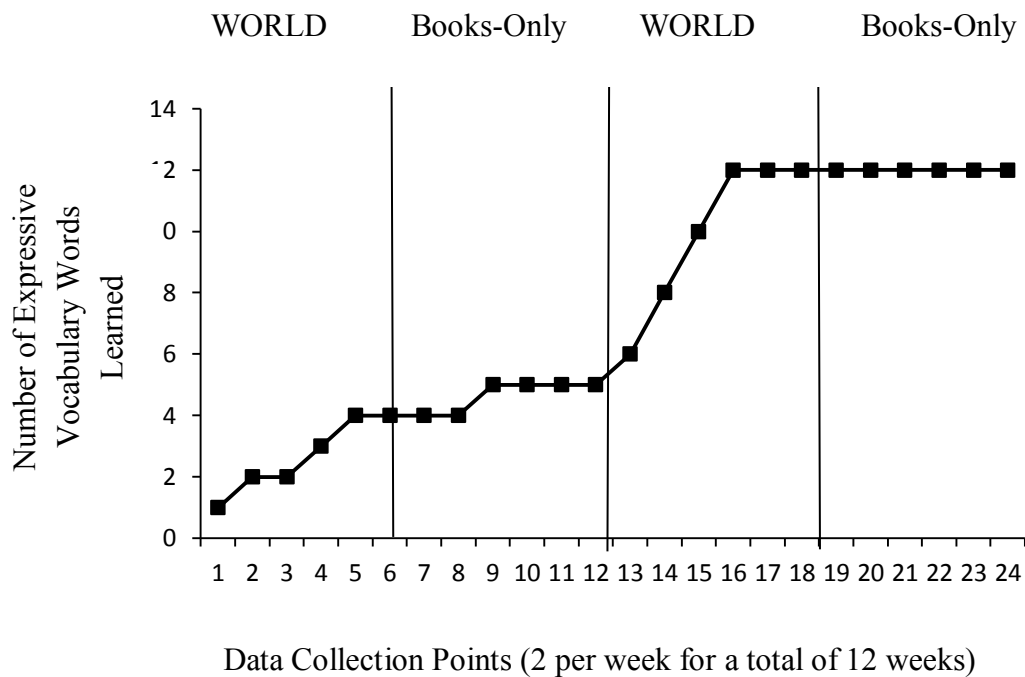


Figure 8 Child 2 – Jacob.

Next, Tau-U nonoverlap analyses were conducted. Results were recorded in Table 17 below. Analyses revealed for phase 1 and 2, a Tau of .89 indicating that 89% of the data between these phases were non-overlapping. The 2-sided p value indicates that there is a < .01 percent chance that these results were obtained by chance alone. Thus, a nonoverlap score of 89% indicated that this phase of the intervention was producing change in Jacob’s expressive vocabulary acquisition between phase 1 and phase 2.

Analyses revealed for phase 2 and 3, a Tau of 1 indicating that 100% of the data between these phases were non-overlapping. The 2-sided p value indicates that there is a < .01 percent chance that these results were obtained by chance alone. Thus, a nonoverlap score of 100% indicated that this phase of the intervention was producing change in Jacob’s expressive vocabulary acquisition between phase 2 and phase 3.

Analyses revealed for phase 3 and 4, a Tau of .50 indicating that 50% of the data between these phases were non-overlapping. The 2-sided p value indicates that there is a <.2, > .1 percent chance that these results were obtained by chance alone. Thus, a nonoverlap score of 50% indicated that this phase of the intervention was producing minimal change in Jacob’s expressive vocabulary acquisition between phase 3 and phase 4. Table 17 below provides a summary of the Tau-U nonoverlap analyses.

Table 17 Jacob, Expressive Vocabulary, Tau-U Nonoverlap

	Tau nonoverlap	Mean phase a	Median phase a	Mean phase b	Median phase b	2-tailed p value
Phase 1a and 2b	.89	2.67	2.5	4.67	5.0	P<.01
Phase 2a and 3b	1	4.67	5.0	10.00	11.00	P<.01
Phase 3a and 4b	.5	10	11	12	12	P<.2, >.1

Trend was also estimated via Kendall's Tau (Parker, 2011) for both the baseline and intervention phases of the data. Results for Kendall's Tau for expressive vocabulary for phase 1 indicated that 87% of data in phase 1, 53% of data in phase 2, 80% of data in phase 3, went up over time for learned expressive vocabulary. There was no trend in phase 4. The figures below (Figures 9, 10 and 11) (generated in WinPepi) illustrate Kendall's Tau for each of the four phases of the data.

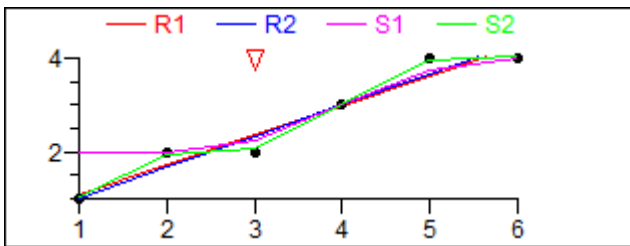


Figure 9 Kendall's Tau – Trendedness – Jacob, Expressive, Phase 1.

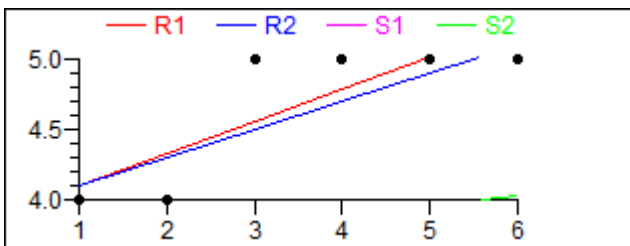


Figure 10 Kendall's Tau – Trendedness – Jacob, Expressive, Phase 2.

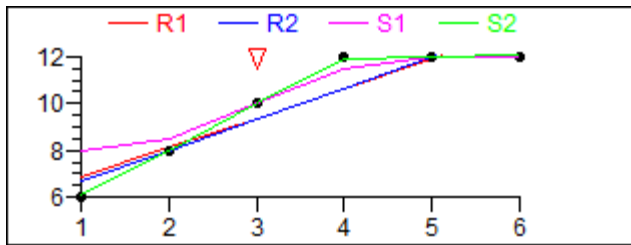


Figure 11 Kendall's Tau – Trendedness – Jacob, Expressive, Phase 3.

Overall, Tau nonoverlap indicated some success of the intervention on increasing acquisition of the target expressive vocabulary words for Jacob. Trendedness suggested that for any given phase, between 0% and 87% of the data acquisition of expressive vocabulary increased over time. Visual Analysis using mean lines suggested an increase in expressive vocabulary acquisition overall. Based on Visual and Statistical Analysis, it appears that the intervention was successful at increasing Jacob's acquisition of the target expressive vocabulary words.

Child 3 – Clide. Clide obtained a standard score of 100 on the EVT-2 when this assessment was given at pretest which suggests that he performed as well as or better than 50% of his same aged peers on this test. He obtained a standard score of 103 on the post-test suggesting that he performed as well as or better than 58% of his same aged peers. On the Conceptual Thinking subtest from the KABC-II, Clide obtained a standard score of nine at pretest and a standard score of nine at posttest.

Visual analysis of Clide’s graphed data was used to determine whether the intervention had resulted in incremental increases in learned expressive vocabulary (Figure 13). The visual analysis was based on observations of trend, intercept gap, mean, slope, and level. First, in order to enhance visual analysis, mean lines were applied to the data. Mean lines were used to visually examine and compare mean levels of data (Morgan & Morgan, 2009).

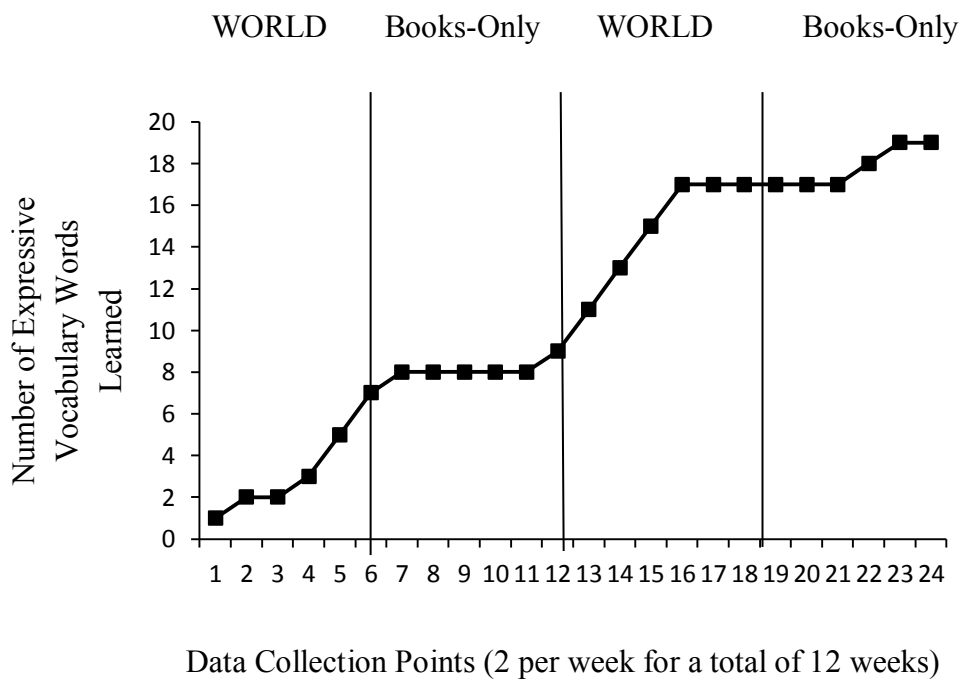


Figure 12 Child 3 – Clide.

Next, Tau-U nonoverlap analyses were conducted. Results were recorded in Table 18. Analyses revealed for phase 1 and 2, a Tau of 1 indicating that 100% of the data between these phases were non-overlapping. The 2-sided p value indicates that there is a < .01 percent chance that these results were obtained by chance alone. A nonoverlap score of 100% indicates that this phase of the intervention produced change in Clide's expressive vocabulary acquisition between phase 1 and phase 2.

Analyses revealed for phase 2 and 3, a Tau of 1 indicating that 100% of the data between these phases were non-overlapping. The 2-sided p value indicates that there is a < .01 percent chance that these results were obtained by chance alone. Thus, a nonoverlap score of 100% indicated that this phase of the intervention produced change in Clide's expressive vocabulary acquisition between phase 2 and phase 3.

Analyses revealed for phase 3 and 4, a Tau of .75 indicating that 75% of the data between these phases were non-overlapping. The 2-sided p value indicates that there is a <.05 percent chance that these results were obtained by chance alone. A nonoverlap score of 75% indicates that this phase of the intervention was producing some change in Clide's expressive vocabulary acquisition between phase 3 and phase 4. Table 18 below provides a summary of the Tau-U nonoverlap analyses.

Table 18 Clide Expressive Vocabulary, Tau U Nonoverlap

	Tau nonoverlap	Mean phase a	Median phase a	Mean phase b	Median phase b	2-tailed P value
Phase 1a and 2b	1	3.33	2.5	8.17	8.0	P<.01
Phase 2a and 3b	1	8.17	8.8	15	16	P<.01
Phase 3a and 4b	.75	15	16	17.83	17.5	P<.05

Trend was also estimated via Kendall's Tau (Parker, 2011) for both the baseline and intervention phases of the data. Results for Kendall's Tau for expressive vocabulary for phase 1 indicated that 93% of data in phase 1, 33% of data in phase 2, 80% of data in phase 3, and 73% of data in phase 4 go up over time for learned expressive vocabulary. The figures below (Figures 14, 15, 16 and 17) (generated in WinPepi) illustrate Kendall's Tau for each of the four phases of the data.

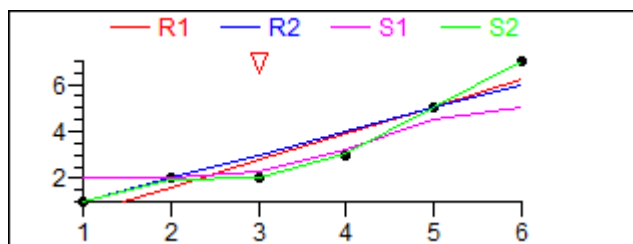


Figure 13 Kendall's Tau – Trendedness – Clide, Expressive, Phase 1.

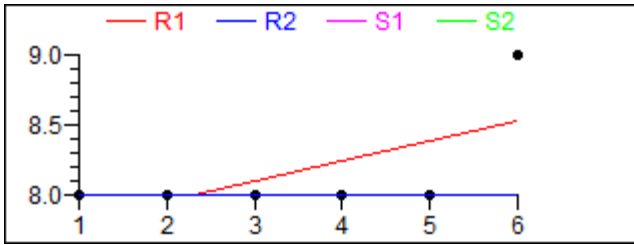


Figure 14 Kendall's Tau – Trendedness – Clide, Expressive, Phase 2.

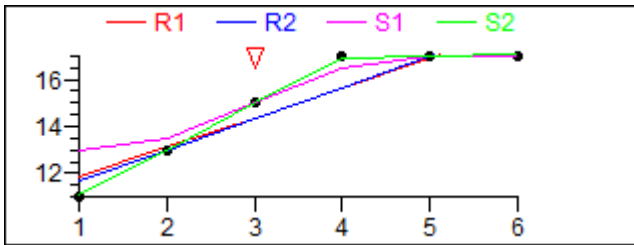


Figure 15 Kendall's Tau – Trendedness – Clide, Expressive, Phase 3.

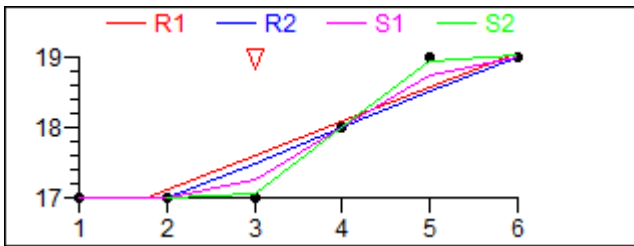


Figure 16 Kendall's Tau – Trendedness – Clide, Expressive, Phase 4.

Overall, Tau nonoverlap indicated some success of the intervention regarding an increase in acquisition of the target expressive vocabulary words for Clide. Trendedness suggests that for any given phase, between 33% and 93% of the data (acquisition of expressive vocabulary) increased over time. Visual Analysis, through the use of mean lines, suggested an increase in expressive vocabulary acquisition overall. Based on Visual and Statistical Analysis, it appears that the intervention was successful at increasing Clide's acquisition of the target expressive vocabulary words.

Child 4 – Cameron. Cameron obtained a standard score of 81 when the EVT-2 was given at pretest which suggests that he performed as well as or better than 10% of his same aged peers on this test. He obtained a standard score of 84 on the post-test suggesting that he performed as well as or better than 14% of his same aged peers. On administrations of the Conceptual Thinking subtest of the KABC-II, Cameron obtained a standard score of seven at pretest and a standard score of eight at posttest.

Visual analysis of Cameron's graphed data was used to determine whether the intervention had resulted in incremental increases in learned expressive vocabulary (Figure 18). The visual analysis was based on observations of trend, intercept gap, mean, slope, and level. First, in order to enhance visual analysis, mean lines were applied to the data. Mean lines were used to visually examine and compare mean levels of data (Morgan & Morgan, 2009).



Figure 17 Child 4 – Cameron.

Next, Tau-U nonoverlap analyses were conducted. Results were recorded in Table 19. Analyses revealed for phase 1 and 2, a Tau of .91 indicating that 91% of the data between phases 1 and 2 were non-overlapping. The 2-sided p value indicates that there is a < .02 percent chance that these results were obtained by chance alone. Thus, a nonoverlap score of 91% indicates that this phase of the intervention is producing change in Cameron’s expressive vocabulary acquisition between phase 1 and phase 2.

Analyses revealed for phase 2 and 3, a Tau of one indicating that 100% of the data between these phases were non-overlapping. The 2-sided p value indicates that

there is a < .01 percent chance that these results were obtained by chance alone. Thus, a nonoverlap score of 100% indicates that this phase of the intervention is producing change in Cameron’s expressive vocabulary acquisition between phase 2 and phase 3.

Analyses revealed for phase 3 and 4, a Tau of .50 indicating that 50% of the data between baseline and intervention phases were non-overlapping. The 2-sided p value indicates that there is a <.20 percent chance that these results were obtained by chance alone. A nonoverlap score of 50% indicates that this phase of the intervention is producing minimal change in Cameron’s expressive vocabulary acquisition between phase 3 and phase 4. Table 19 below provides a summary of the Tau-U nonoverlap analyses.

Table 19 Cameron, Expressive Vocabulary, Tau-U Nonoverlap

	Tau nonoverlap	Mean phase a	Median phase a	Mean phase b	Median phase b	2-tailed P value
Phase 1a and 2b	0.91	.5	0	2	2	P<.02
Phase 2a and 3b	1	2.00	2.0	4.00	4.0	P<.01
Phase 3a and 4b	.50	4.00	4.0	5.00	5.0	P<.20

Trend was also estimated via Kendall's Tau (Parker, 2011) for both the baseline and intervention phases of the data. Results for Kendall's Tau for expressive vocabulary for phase 1 indicated that 20% of data in phase 1, 0% of data in phase 2, 60% of data in phase 3, and 0% of data in phase 4 go up over time for learned expressive vocabulary. The figures below (Figures 19, 20, 21 and 22) (generated in WinPepi) illustrate Kendall's Tau for each of the four phases of the data.

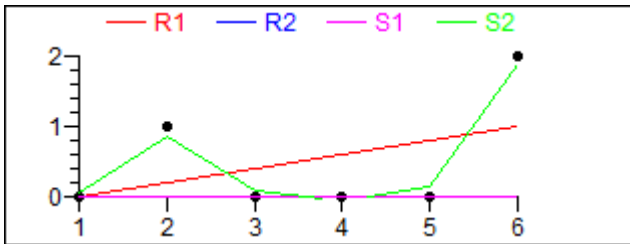


Figure 18 Kendall's Tau – Trendedness – Cameron, Expressive, Phase 1

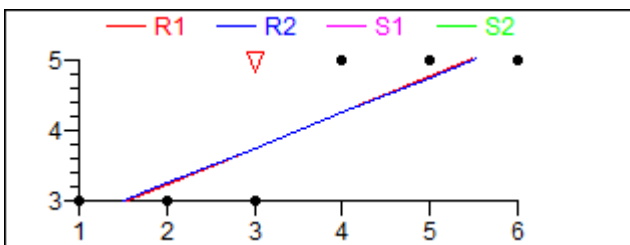


Figure 19 Kendall's Tau – Trendedness – Cameron, Expressive, Phase 3

Overall, Tau nonoverlap indicated some success of the intervention on increasing acquisition of the target expressive vocabulary words. Trendedness suggested that for any given phase, between 0% and 60% of the data (acquisition of expressive vocabulary) increase over time. Visual Analysis through the use of mean lines, suggested a slight increase in expressive vocabulary acquisition overall; however, increases made were not as high as those suggested by “ideal data.” Based on Visual and Statistical Analysis, it appears that the intervention was minimally successful at increasing Cameron’s acquisition of the target expressive vocabulary words.

Child 5 – Mary. Mary obtained a standard score of 78 on the EVT-II when this assessment was given at pretest which means that she performed as well as or better than 7% of her same aged peers on this test. She obtained a standard score of 81 on the post-test suggesting that she performed as well as or better than 5% of her same aged peers. On the Conceptual Thinking subtest from the KABC-II, at pretest, Mary obtained a standard score of five and at posttest she obtained a standard score of two.

Visual analysis of Mary’s graphed data was used to determine whether the intervention had resulted in incremental increases in learned expressive vocabulary (Figure 23). The visual analysis was based on observations of trend, intercept gap, mean, slope, and level. First, in order to enhance visual analysis, mean lines were applied to the data. Mean lines were used to visually examine and compare mean levels of data (Morgan & Morgan, 2009).

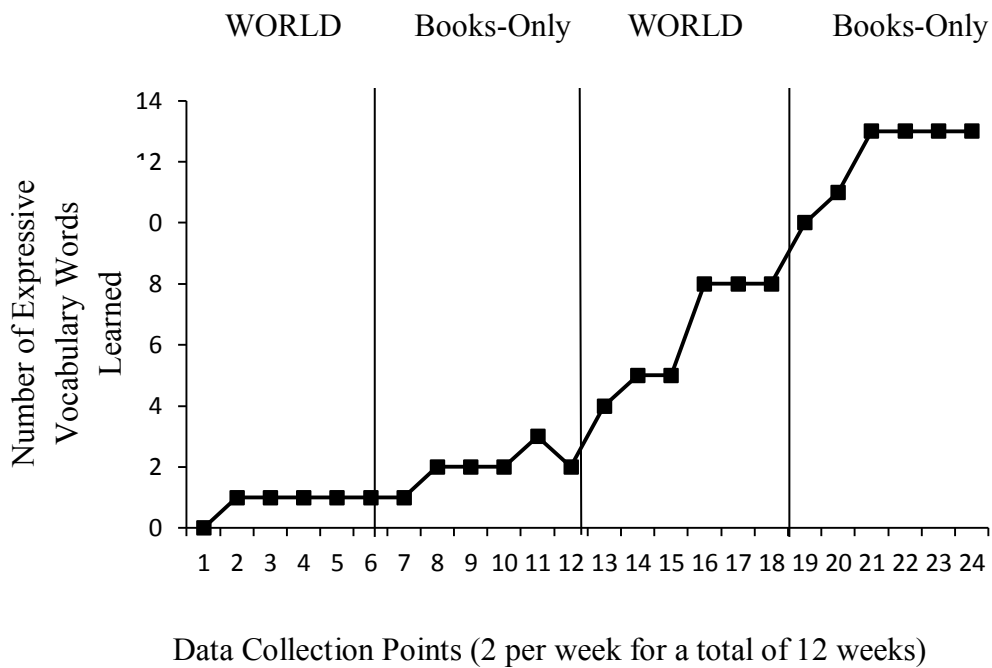


Figure 20 Child 5 – Mary

Next, Tau-U nonoverlap analyses were conducted. Results were recorded in Table 20. Analyses revealed for phase 1 and 2, a Tau of .86 indicating that 86% of the data between phases 1 and 2 were non-overlapping. The 2-sided p value indicates that there is a < .02 percent chance that these results were obtained by chance alone. A nonoverlap score of 86% indicates that this phase of the intervention is producing change in Mary’s expressive vocabulary acquisition between phase 1 and phase 2.

Analyses revealed for phase 2 and 3, a Tau of 1 indicating that 100% of the data between these phases were non-overlapping. The 2-sided p value indicates that there is a

< .01 percent chance that these results were obtained by chance alone. A nonoverlap score of 100% indicates that this phase of the intervention is producing change in Mary's expressive vocabulary acquisition between phase 2 and phase 3.

Analyses revealed for phase 3 and 4, a Tau of 1 indicating that 100% of the data between these phases were non-overlapping. The 2-sided p value indicates that there is a <.01 percent chance that these results were obtained by chance alone. A nonoverlap score of 100% indicates that this phase of the intervention is producing change in Mary's expressive vocabulary acquisition between phase 3 and phase 4. Table 20 below provides a summary of the Tau-U nonoverlap analyses.

Table 20 Mary, Expressive Vocabulary, Tau-U Nonoverlap

	Tau nonoverlap	Mean phase a	Median phase a	Mean phase b	Median phase b	2-tailed P value
Phase 1a and 2b	0.86	0.83	1.0	2.00	2.0	P<.02
Phase 2a and 3b	1	2.00	2.0	6.33	6.5	P<.01
Phase 3a and 4b	1	6.33	6.5	12.17	13.0	P<.01

Trend was also estimated via Kendall's Tau (Parker, 2011) for both the baseline and intervention phases of the data. Results for Kendall's Tau for expressive vocabulary

for phase 1 indicated that 33% of data in phase 1, 47% of data in phase 2, 73% of data in phase 3, and 60% of data in phase 4 go up over time for learned expressive vocabulary. These results do not represent slope. The figures below (Figures 24, 25, 26 and 27) (generated in WinPepi) illustrate Kendall's Tau for each of the four phases of the data.

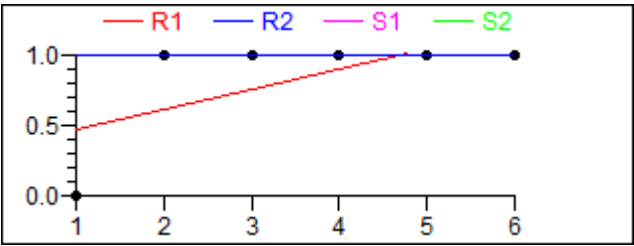


Figure 21 Kendall's Tau – Trendedness – Mary, Expressive, Phase 1.

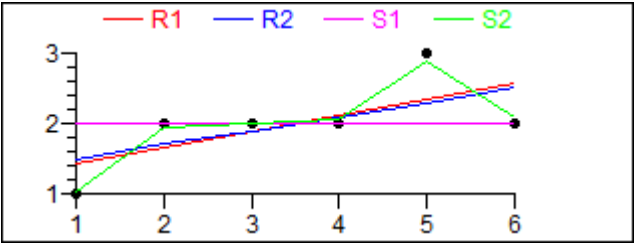


Figure 22 Kendall's Tau – Trendedness – Mary, Expressive, Phase 2.

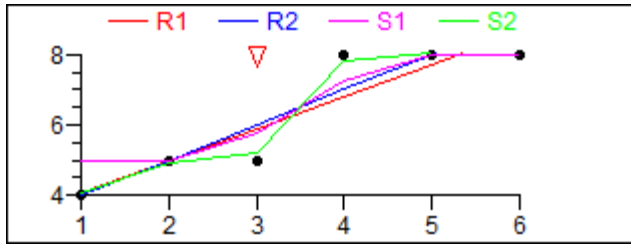


Figure 23 Kendall's Tau – Trendedness – Mary, Expressive, Phase 3.

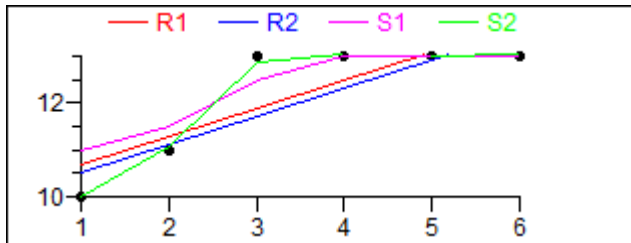


Figure 24 Kendall's Tau – Trendedness – Mary, Expressive, Phase 4.

Overall, Tau nonoverlap indicated some success of the intervention on increasing acquisition of the target expressive vocabulary words. Trendedness suggests that for any given phase, between 33% and 73% of the data (acquisition of expressive vocabulary) increase during each phase. Visual Analysis through the use of mean lines, suggests a slight increase in expressive vocabulary acquisition overall; however, increases made were not as high as those suggested by “ideal data.” Based on Visual and Statistical Analysis, it appears that the intervention was somewhat successful at increasing Mary’s acquisition of the target expressive vocabulary words.

Child 6 – Laura. Laura obtained a standard score of 106 on the EVT-2 when this assessment was given at pretest which means that she performed as well as or better than 66% of her same aged peers on this test. She obtained a standard score of 110 on the post-test suggesting that she performed as well as or better than 75% of her same aged peers. She was also administered the Conceptual Thinking subtest from the KABC-II. At pretest, Laura obtained a standard score of thirteen and at posttest she obtained a standard score of fourteen.

Visual analysis of Laura’s graphed data was used to determine whether the intervention had resulted in incremental increases in learned expressive vocabulary (Figure 28). The visual analysis was based on observations of trend, intercept gap, mean, slope, and level. First, in order to enhance visual analysis, mean lines were applied to the data. Mean lines were used to visually examine and compare mean levels of data (Morgan & Morgan, 2009).

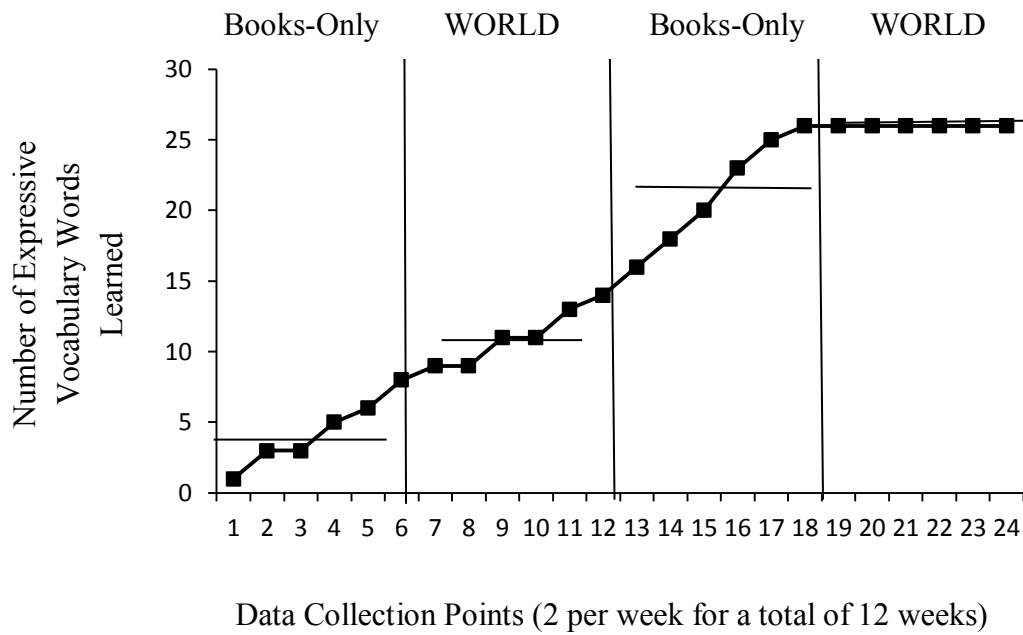


Figure 25 Child 5 - Laura

Table 21 Laura, Expressive Vocabulary, Tau-U Nonoverlap

	Tau nonoverlap	Mean phase a	Median phase a	Mean phase b	Median phase b	2-tailed P value
Phase 1a and 2b	0.91	.50	0.0	2.00	2.0	P<.02
Phase 2a and 3b	1	2.00	2.0	4.00	4.0	P<.01
Phase 3a and 4b	.5	4	4	5	5	P<.2,>.1

Next, Tau-U nonoverlap analyses were conducted. Results can be found in Table 21 above. Analyses revealed for phase 1 and 2, a Tau of .91 indicating that 91% of the data between phases 1 and 2 were non-overlapping. The 2-sided p value indicates that there is a $< .02$ percent chance that these results were obtained by chance alone. A nonoverlap score of 91% indicates that this phase of the intervention is producing change in Laura's expressive vocabulary acquisition between phase 1 and phase 2.

Analyses revealed for phase 2 and 3, a Tau of 1 indicating that 100% of the data between these phases were non-overlapping. The 2-sided p value indicates that there is a $< .01$ percent chance that these results were obtained by chance alone. A nonoverlap score of 100% indicates that this phase of the intervention is producing change in Laura's expressive vocabulary acquisition between phase 2 and phase 3.

Analyses revealed for phase 3 and 4, a Tau of .50 indicating that 50% of the data between baseline and intervention phases were non-overlapping. The 2-sided p value indicates that there is a $< .2, > .1$ percent chance that these results were obtained by chance alone. A nonoverlap score of 50% indicates that this phase of the intervention is producing minimal change in Laura's expressive vocabulary acquisition between phase 3 and phase 4.

Trend was also estimated via Kendall's Tau (Parker, 2011) for both the baseline and intervention phases of the data. Results for Kendall's Tau for expressive vocabulary for phase 1 indicated that 93% of data in phase 1, 87% of data in phase 2, 100% of data in phase 3, and 0% of data in phase 4 go up over time for learned expressive vocabulary.

The figures below (Figures 29, 30, 31 and 32) (generated in WinPepi) illustrate Kendall's Tau for each of the four phases of the data.

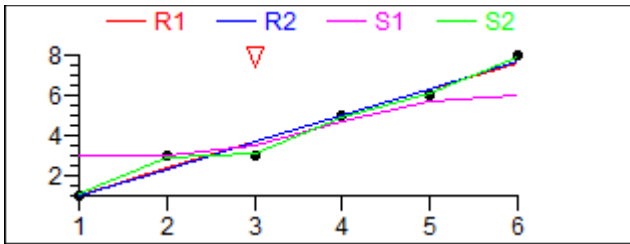


Figure 26 Kendall's Tau – Trendedness – Laura, Expressive, Phase 1.

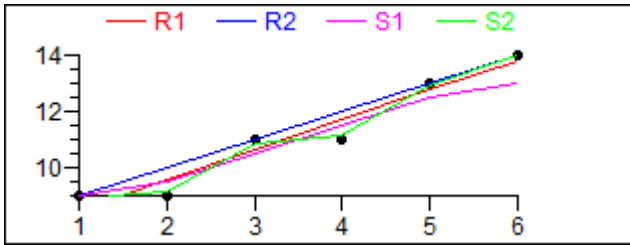


Figure 27 Kendall's Tau – Trendedness – Laura, Expressive, Phase 2.

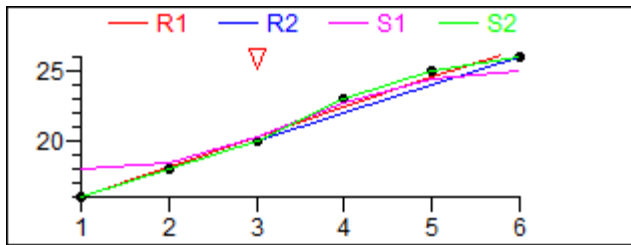


Figure 28 Kendall's Tau – Trendedness – Laura, Expressive, Phase 3.

Overall, Tau nonoverlap indicated some success of the intervention on increasing acquisition of the target expressive vocabulary words. Trendedness suggests that for any given phase, between 0% and 100% of the data (acquisition of expressive vocabulary) increase during each phase. Visual Analysis through the use of mean lines, suggests an increase in expressive vocabulary acquisition overall for this child. Based on Visual and Statistical Analysis, it appears that the intervention was somewhat successful at increasing Mary's acquisition of the target expressive vocabulary words.

Receptive Vocabulary Target Word Acquisition, Shared Reading Intervention Versus Reading-As-Usual Condition

Child 1 – John. John obtained a standard score of 100 on the PPVT-IV when this assessment was given at pretest which suggests that he performed as well as or better than 50% of his same aged peers on this test. He obtained a standard score of 103 on the post-test suggesting that he performed as well as or better than 58% of his same aged peers.

A visual analysis of the data graphed corresponding to this question was first completed to determine if the intervention has caused an increase in learned receptive vocabulary (Figure 33). The visual analysis was based on observations of trend, intercept gap, mean, slope, and level. First, in order to enhance visual analysis, mean lines were applied to the data. Mean lines were used to visually examine and compare mean levels of data (Morgan & Morgan, 2009).

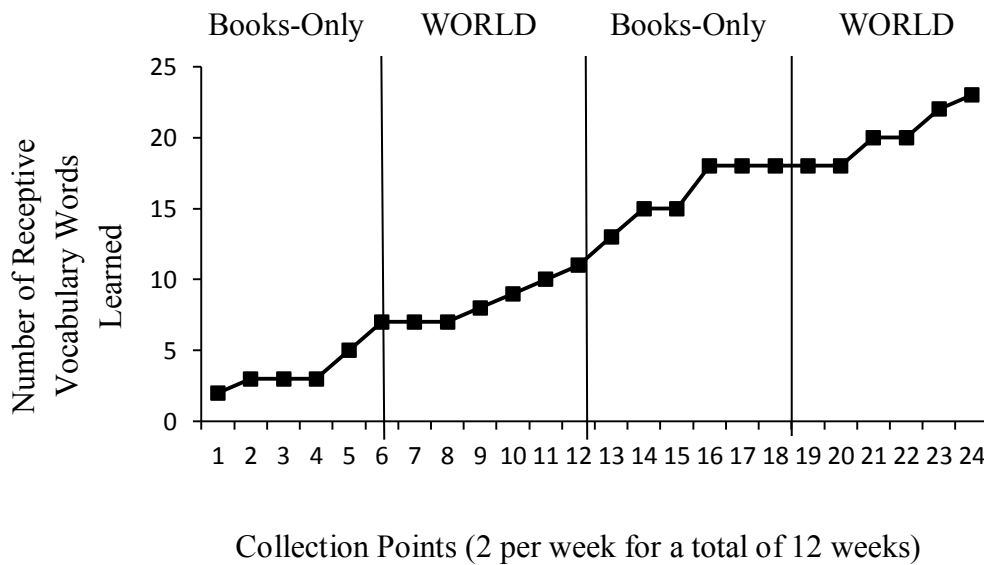


Figure 29 Child 1 – John

Next, Tau-U nonoverlap analyses were conducted. Results were recorded in Table 22. Analyses revealed for phase 1 and 2, a Tau of .95 indicating 95% of the data

between phases 1 and 2 were non-overlapping. The 2-sided p value indicates that there is a $< .01$ percent chance that these results were obtained by chance alone. Thus, a nonoverlap score of 95% indicates that this phase of the intervention is producing change in John's receptive vocabulary acquisition between phase 1 and phase 2.

Analyses revealed for phase 2 and 3, a Tau of 1 indicating that 100% of the data between baseline and intervention phases were non-overlapping. The 2-sided p value indicates that there is a $< .01$ percent chance that these results were obtained by chance alone. Thus, a nonoverlap score of 100% indicates that this phase of the intervention is producing change in John's receptive vocabulary acquisition between phase 2 and phase 3.

Analyses revealed for phase 3 and 4, a Tau of .83 indicating that 83% of the data between baseline and intervention phases were non-overlapping. The 2-sided p value indicates that there is a $< .01$ percent chance that these results were obtained by chance alone. A nonoverlap score of 83% indicates that this phase of the intervention is producing change in John's receptive vocabulary acquisition between phase 3 and phase 4. Table 22 below provides a summary of the Tau-U nonoverlap analyses.

Table 22 John, Receptive Vocabulary, Tau-U Nonoverlap

	Tau nonoverlap	Mean phase a	Median phase a	Median phase b	Median phase b	2-tailed p value
Phase 1a and 2b	0.95	3.83	3.0	8.67	8.5	P<.01
Phase 2a and 3b	1	8.67	8.5	16.17	16.5	P<.01
Phase 3a and 4b	0.83	16.17	16.5	20.17	20.0	P<.01

Trend was also estimated via Kendall’s Tau for both the baseline and intervention phases of the data. Results for Kendall’s Tau for receptive vocabulary for phase 1 indicated that 80% of data in phase 1, 93% of data in phase 2, 73% of data in phase 3, and 87% of data in phase 4 goes up over time for learned receptive vocabulary. The figures below (Figures 34, 35, 36 and 37) (generated in WinPepi) illustrate Kendall’s Tau for each of the four phases of the data.

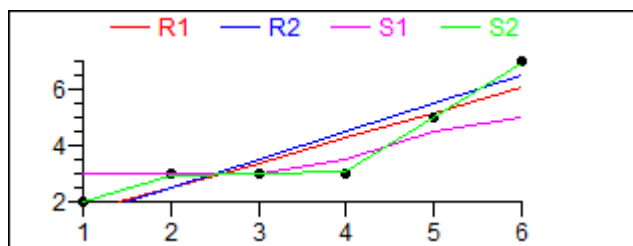


Figure 30 Kendall’s Tau – Trendedness – John, Receptive, Phase 1.

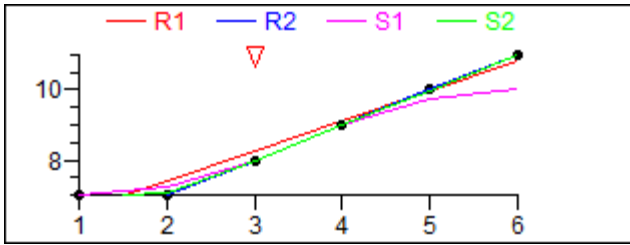


Figure 31 Kendall's Tau – Trendedness – John, Receptive, Phase 2.

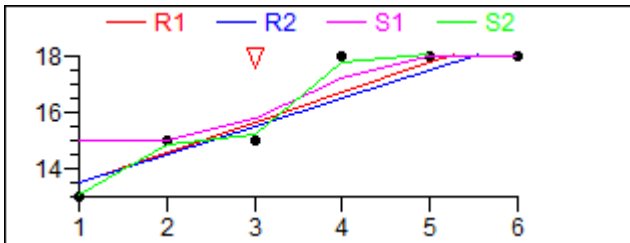


Figure 32 Kendall's Tau – Trendedness – John, Receptive, Phase 3.

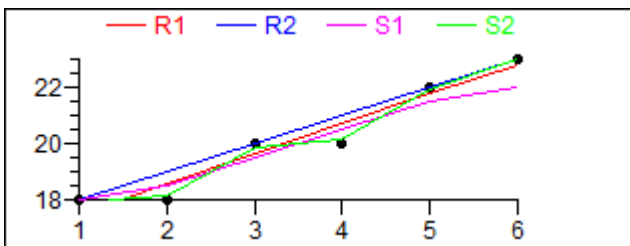
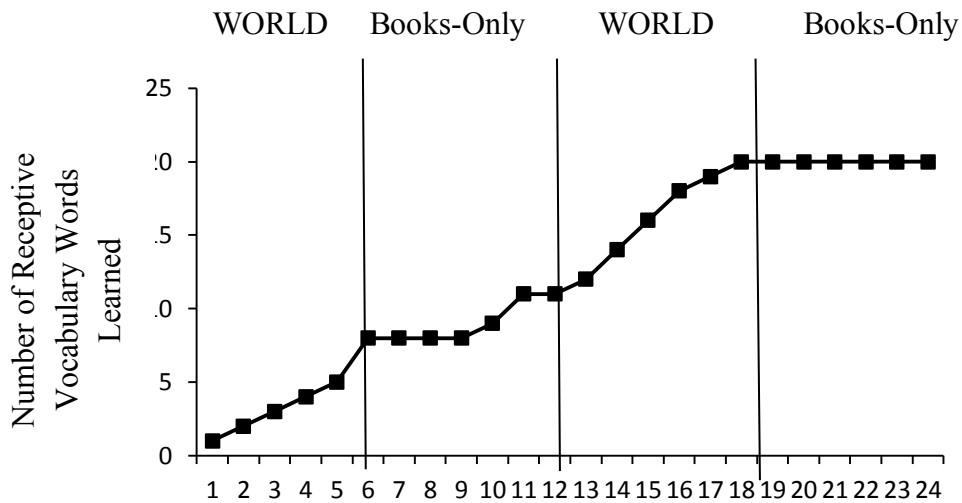


Figure 33 Kendall's Tau – Trendedness – John, Receptive, Phase 4.

Overall, Tau nonoverlap indicated some success of the intervention on increasing acquisition of the target receptive vocabulary words. Trendedness suggests that for any given phase, between 73% and 93% of the data (acquisition of receptive vocabulary) increase over time. Visual Analysis through the use of mean lines suggests an increase in receptive vocabulary acquisition overall. Based on Visual and Statistical Analysis, it appears that the intervention was successful at increasing John's acquisition of the target receptive vocabulary words.

Child 2 – Jacob. Jacob obtained a standard score of 104 on the PPVT-IV when this assessment was given at pretest which means that he performed as well as or better than 61% of his same aged peers on this test. He obtained a standard score of 110 on the posttest suggesting that he performed as well as or better than 75% of his same aged peers.

Visual analysis of John's graphed data was used to determine whether the intervention had resulted in incremental increases in learned receptive vocabulary (Figure 38). The visual analysis was based on observations of trend, intercept gap, mean, slope, and level. First, in order to enhance visual analysis, mean lines were applied to the data. Mean lines were used to visually examine and compare mean levels of data (Morgan & Morgan, 2009).



Data Collection Points (2 per week for a total of 12 weeks)

Figure 34 Child 2 – Jacob

Next, Tau-U nonoverlap analyses were conducted. Results were recorded in Table 23. Analyses revealed for phase 1 and 2, a Tau of .94, indicating that 94% of the data between these phases were non-overlapping. The 2-sided p value indicates that there is a < .01 percent chance that these results were obtained by chance alone. Thus, a nonoverlap score of 94% indicates that this phase of the intervention is producing change in Jacob’s receptive vocabulary acquisition between phase 1 and phase 2.

Analyses revealed for phase 2 and 3, a Tau of 1 indicating that 100% of the data between baseline and intervention phases were non-overlapping. The 2-sided p value indicates that there is a < .01 percent chance that these results were obtained by chance

alone. A nonoverlap score of 100% indicates that this phase of the intervention is producing change in Jacob’s receptive vocabulary knowledge between phase 2 and phase 3.

Analyses revealed for phase 3 and 4, a Tau of .89 indicating that 89% of the data between baseline and intervention phases were non-overlapping. The 2-sided p value indicates that there is a < .1 percent chance that these results were obtained by chance alone. Thus, a nonoverlap score of 89% indicates that this phase of the intervention is producing change in Jacob’s receptive vocabulary acquisition between phase 3 and phase 4. Table 23 below provides a summary of the Tau-U nonoverlap analyses.

Table 23 Jacob, Receptive Vocabulary, Tau-U Nonoverlap

	Tau nonoverlap	Mean phase a	Median phase a	Mean phase b	Median phase b	2-tailed P value
Phase 1a and 2b	0.94	3.83	3.5	9.17	8.5	P<.01
Phase 2a and 3b	1	9.17	8.5	16.5	17.0	P<.01
Phase 3a and 4b	0.89	16.5	17	20.5	20	P<.1

Trend was also estimated via Kendall’s Tau for both the baseline and intervention phases of the data. Results for Kendall’s Tau for receptive vocabulary for

phase 1 indicated that 100% of data in phase 1, 73% of data in phase 2, 100% of data in phase 3, and no trend for data in phase 4 go up over time for learned receptive vocabulary. The Figures (39, 40, 41 and 42) (generated in WinPepi) below illustrate Kendall's Tau for each of the four phases of the data.

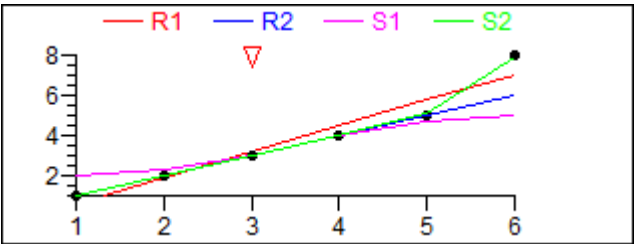


Figure 35 Kendall's Tau – Trendedness – Jacob, Receptive, Phase 1.

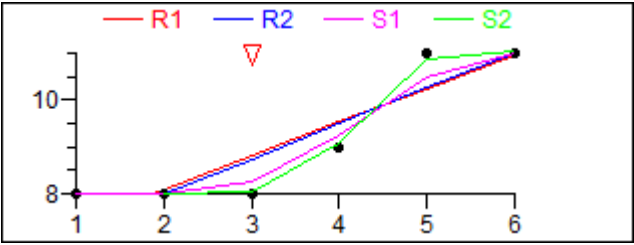


Figure 36 Kendall's Tau – Trendedness – Jacob, Receptive, Phase 2.

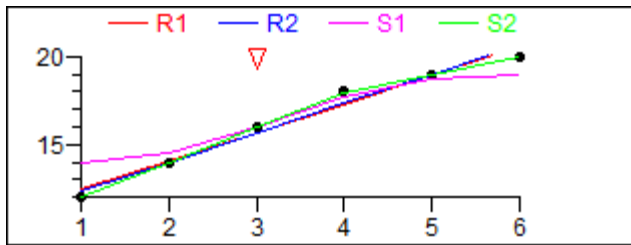


Figure 37 Kendall's Tau – Trendedness – Jacob, Receptive, Phase 3.

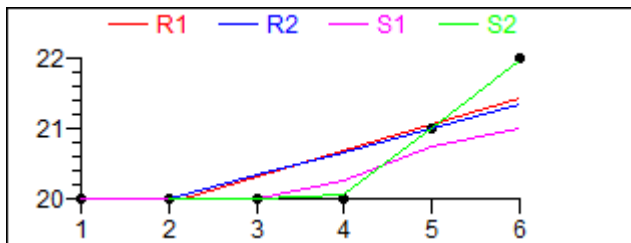


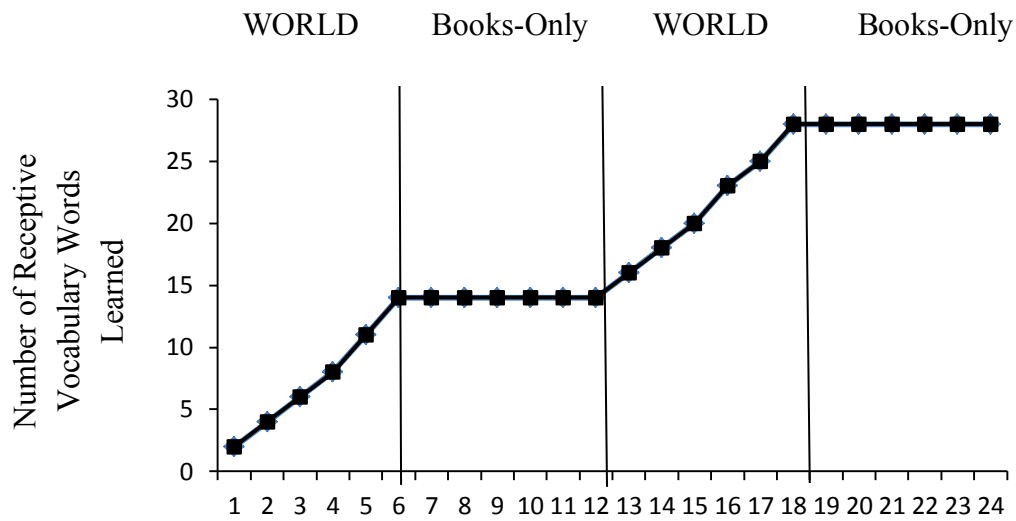
Figure 38 Kendall's Tau – Trendedness – Jacob, Receptive, Phase 4.

Overall, Tau nonoverlap indicated some success of the intervention on increasing acquisition of the target receptive vocabulary words. Trendedness suggests that for any given phase, between 0% and 100% of the data (acquisition of receptive vocabulary) increase over time. Visual Analysis through the use of mean lines suggests an increase in receptive vocabulary acquisition overall; however, increases made were not as high as those suggested by “ideal data.” Based on Visual and Statistical Analysis, it appears that

the intervention was successful at increasing Jacob's acquisition of the target receptive vocabulary words.

Child 3 – Clide. Clide obtained a standard score of 94 on the PPVT-IV when this assessment was given at pretest which means that he performed as well as or better than 34% of his same aged peers on this test. He obtained a standard score of 96 on the post-test suggesting that he performed as well as or better than 39% of his same aged peers.

Visual analysis of Clide's graphed data was used to determine whether the intervention had resulted in incremental increases in learned receptive vocabulary (Figure 43). The visual analysis was based on observations of trend, intercept gap, mean, slope, and level. First, in order to enhance visual analysis, mean lines were applied to the data. Mean lines were used to visually examine and compare mean levels of data (Morgan & Morgan, 2009).



Data Collection Points (2 per week for a total of 12 weeks)

Figure 39 Child 3 – Clide

Next, Tau-U nonoverlap analyses were conducted. Results were recorded on Table 24 below. Analyses revealed for phase 1 and 2, a Tau of .89 indicating that 89% of the data between these phases were non-overlapping. The 2-sided p value indicates that there is a < .02 percent chance that these results were obtained by chance alone. A nonoverlap score of 89% indicates that this phase of the intervention is producing change in Clide’s receptive vocabulary acquisition between phase 1 and phase 2.

Analyses revealed for phase 2 and 3, a Tau of 1 indicating that 100% of the data between these phases were non-overlapping. The 2-sided p value indicates that there is a < .01 percent chance that these results were obtained by chance alone. A nonoverlap

score of 100% indicates that this phase of the intervention is producing change in Clide's receptive vocabulary acquisition between phase 2 and phase 3.

Analyses revealed for phase 3 and 4, a Tau of .67 indicating that 67% of the data between these phases were non-overlapping. The 2-sided p value indicates that there is a <.1,>.05 percent chance that these results were obtained by chance alone. A nonoverlap score of 67% indicates that this phase of the intervention is producing change in Clide's receptive vocabulary acquisition between phase 3 and phase 4.

Table 24 Clide, Receptive Vocabulary, Tau-U Nonoverlap

	Tau nonoverla p	Mean phase a	Median phase a	Mean phase b	Median phase b	2-tailed P value
Phase 1 a and 2b	.89	7.5	7	14.00	14.0	P<.02
Phase 2 a and 3b	1	14	14	21.17	21.5	P<.01
Phase 3 a and 4b	0.67	21.17	21.5	25	25	P<.1,>.05

Trend was also estimated via Kendall's Tau (Parker, 2011) for both the baseline and intervention phases of the data. Results for Kendall's Tau for receptive vocabulary

for phase 1 indicated that 100% of data in phase 1, 0% of data in phase 2, 100% of data in phase 3, and 0% of data in phase 4 go up over time for learned receptive vocabulary. These results do not represent slope. The Figures (44, 45, 46 and 49) (generated in WinPepi) below illustrate Kendall's Tau for each of the four phases of the data.

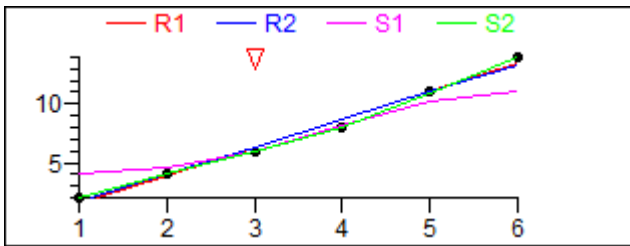


Figure 40 Kendall's Tau – Trendedness – Clide, Receptive, Phase 1.

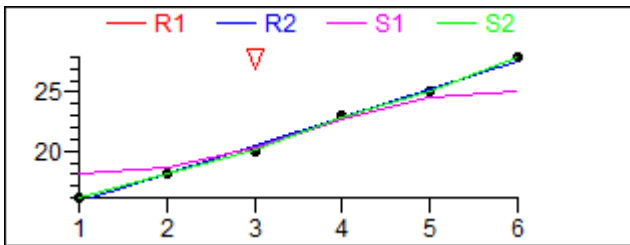


Figure 41 Kendall's Tau – Trendedness – Clide, Receptive, Phase 3.

Overall, Tau nonoverlap indicated success of the intervention with regard to increasing acquisition of the target receptive vocabulary words. Trendedness suggests that for any given phase, between 0% and 100% of the data (acquisition of receptive vocabulary) was expressed over time. Visual Analysis through the use of mean lines, suggests an increase in receptive vocabulary acquisition. Based on Visual and Statistical Analysis, it appears that the intervention was successful at increasing Clide's acquisition of the target receptive vocabulary words.

Child 4 – Cameron. Cameron obtained a standard score of 90 when the PPVT-IV was given at pretest which suggests that he performed as well as or better than 25% of his same aged peers on this test. He obtained a standard score of 89 on the post-test suggesting that he performed as well as or better than 23% of his same aged peers.

Visual analysis of Cameron's graphed data was used to determine whether the intervention had resulted in incremental increases in learned receptive vocabulary (Figure 48). The visual analysis was based on observations of trend, intercept gap, mean, slope, and level. First, in order to enhance visual analysis, mean lines were applied to the data. Mean lines were used to visually examine and compare mean levels of data (Morgan & Morgan, 2009).

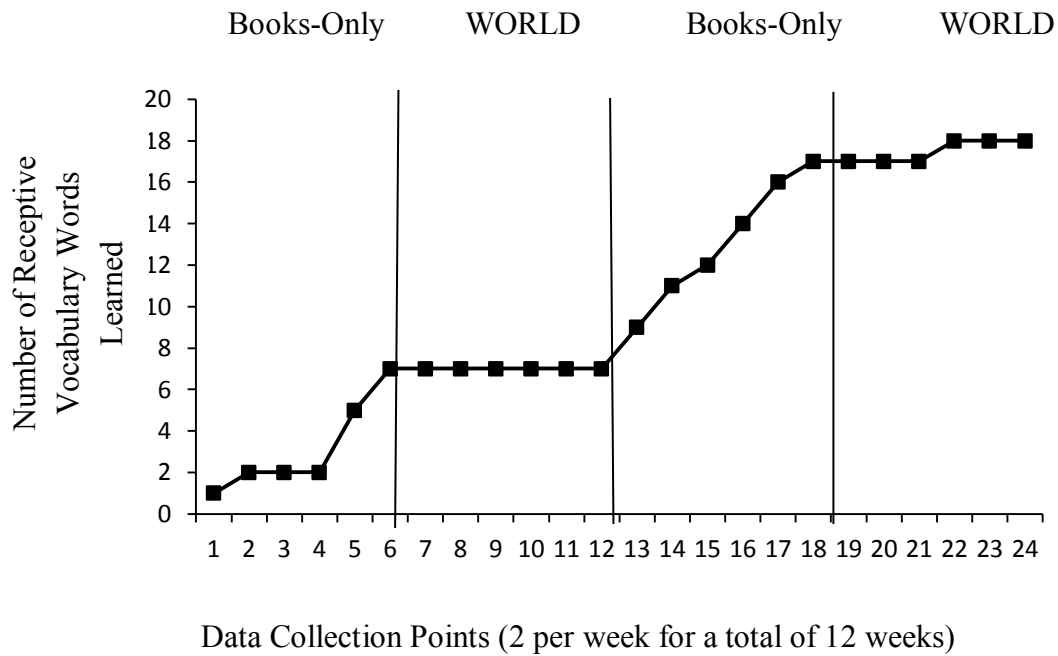


Figure 42 Child 4 – Cameron

Next, Tau-U nonoverlap analyses were conducted. Results were recorded in Table 25. Analyses revealed for phase 1 and 2, a Tau of .91 indicating that 91% of the data between phases 1 and 2 were non-overlapping. The 2-sided p value indicates that there is a < .02 percent chance that these results were obtained by chance alone. A nonoverlap score of 91% indicates that this phase of the intervention is producing change in Cameron’s receptive vocabulary acquisition between phase 1 and phase 2.

Analyses revealed for phase 2 and 3, a Tau of 1 indicating that 100% of the data between these phases were non-overlapping. The 2-sided p value indicates that there is a < .01 percent chance that these results were obtained by chance alone. Thus, a

nonoverlap score of 100% indicates that this phase of the intervention is producing change in Cameron’s receptive vocabulary acquisition between phase 2 and phase 3.

Analyses revealed for phase 3 and 4, a Tau of .56 indicating that 56% of the data between these phases were non-overlapping. The 2-sided p value indicates that there is a <.20 percent chance that these results were obtained by chance alone. Thus, a nonoverlap score of 56% indicates that this phase of the intervention is producing minimal change in Cameron’s receptive vocabulary acquisition between phase 3 and phase 4. Table 25 below provides a summary of the Tau-U nonoverlap analyses.

Table 25 Cameron, Receptive Vocabulary, Tau-U Nonoverlap

	Tau nonoverlap	Mean phase a	Median phase a	Mean phase b	Median phase b	2-tailed P value
Phase 1 a and 2b	0.91	3.7	2.0	7.00	7.0	P<.02
Phase 2 a and 3b	1	7.00	7.0	13.17	13.0	P<.01
Phase 3 a and 4b	.56	13.17	13	16.00	16.0	P<.20

Trend was also estimated via Kendall's Tau (Parker, 2011) for both the baseline and intervention phases of the data. Results for Kendall's Tau for receptive vocabulary for phase 1 indicated that 80% of data in phase 1, 0% of data in phase 2, 100% of data in phase 3, and 60% of data in phase 4 go up over time for learned receptive vocabulary. The Figures (49, 50, 51 and 52) (generated in WinPepi) below illustrate Kendall's Tau for each of the four phases of the data.

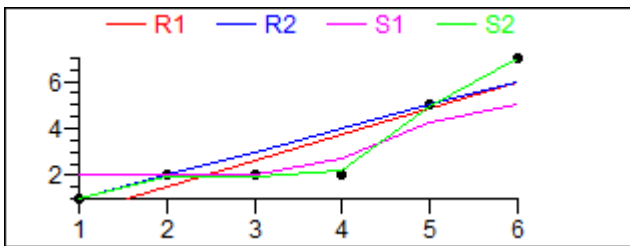


Figure 43 Kendall's Tau – Trendedness – Cameron, Receptive, Phase 1.

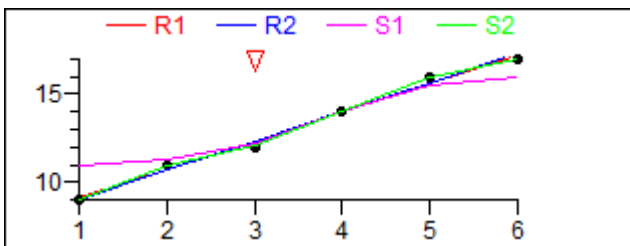


Figure 44 Kendall's Tau – Trendedness – Cameron, Receptive, Phase 3.

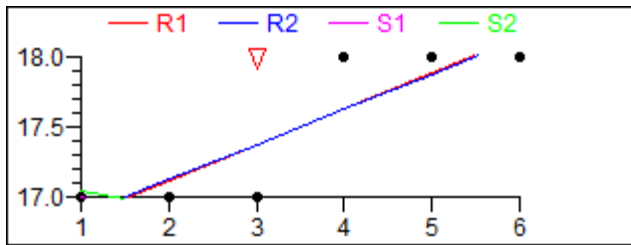


Figure 45 Kendall's Tau – Trendedness – Cameron, Receptive, Phase 4.

Overall, Tau nonoverlap indicated some success of the intervention with regard to increasing acquisition of the target receptive vocabulary words. Trendedness suggests that for any given phase, between 0% and 100% of the data (acquisition of receptive vocabulary) increase over time. Visual Analysis through the use of mean lines, suggests a slight increase in receptive vocabulary acquisition overall; however, increases made were not as high as those suggested by “ideal data.” Based on Visual and Statistical Analysis, it appears that the intervention was minimally successful at increasing Cameron's acquisition of the target receptive vocabulary words.

Child 5 – Mary. Mary obtained a standard score of 79 when the PPVT-IV was given at pretest which means that she performed as well as or better than 8% of her same aged peers on this test. She obtained a standard score of 82 on the post-test suggesting that she performed as well as or better than 12% of her same aged peers.

Visual analysis of Mary's graphed data was used to determine whether the intervention had resulted in incremental increases in learned receptive vocabulary

(Figure 53). The visual analysis was based on observations of trend, intercept gap, mean, slope, and level. First, in order to enhance visual analysis, mean lines were applied to the data. Mean lines were used to visually examine and compare mean levels of data (Morgan & Morgan, 2009).

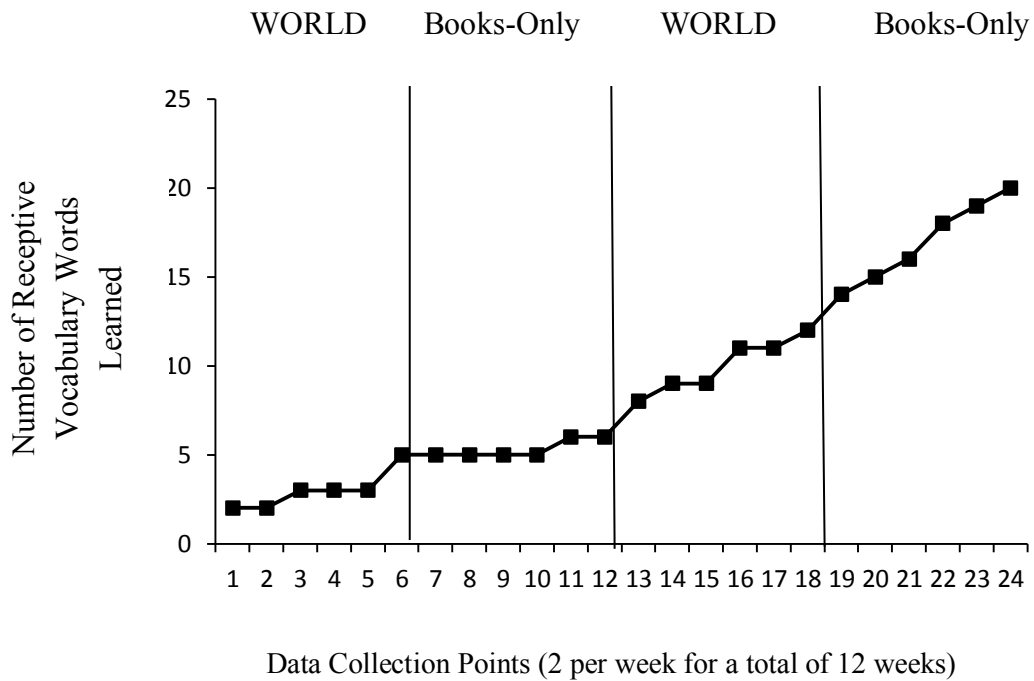


Figure 46 Child 5 – Mary

Next, Tau-U nonoverlap analyses were conducted. Results were recorded in Table 26. Analyses revealed for phase 1 and 2, a Tau of .89 indicating that 89% of the data between phases 1 and 2 were non-overlapping. The 2-sided p value indicates that there is a $< .01$ percent chance that these results were obtained by chance alone. Thus, a nonoverlap score of 89% indicates that this phase of the intervention is producing change in Mary's receptive vocabulary acquisition between phase 1 and phase 2.

Analyses revealed for phase 2 and 3, a Tau of 1 indicating that 100% of the data between these phases were non-overlapping. The 2-sided p value indicates that there is a $< .01$ percent chance that these results were obtained by chance alone. Thus, a nonoverlap score of 100% indicates that this phase of the intervention is producing change in Mary's receptive vocabulary acquisition between phase 2 and phase 3.

Analyses revealed for phase 3 and 4, a Tau of 1 indicating that 100% of the data between these phases were non-overlapping. The 2-sided p value indicates that there is a $< .01$ percent chance that these results were obtained by chance alone. A nonoverlap score of 100% indicates that this phase of the intervention is producing change in Mary's receptive vocabulary acquisition between phase 3 and phase 4. Table 26 below provides a summary of the Tau-U nonoverlap analyses.

Table 26 Mary, Receptive Vocabulary, Tau-U Nonoverlap

	Tau nonoverlap	Mean phase a	Median phase a	Mean phase b	Median phase b	2-tailed P value
Phase 1 a and 2b	0.89	3.00	3.0	5.33	5.0	P<.01
Phase 2 a and 3b	1	5.33	5.0	10.00	10.5	P<.01
Phase 3 a and 4b	1	10.00	10.0	17.00	17.0	P<.01

Trend was also estimated via Kendall's Tau (Parker, 2011) for both the baseline and intervention phases of the data. Results for Kendall's Tau for receptive vocabulary for phase 1 indicated that 73% of data in phase 1, 53% of data in phase 2, 87% of data in phase 3, and 100% of data in phase 4 goes up over time for learned receptive vocabulary. The Figures (54, 55, 56 and 57) (generated by WinPepi) below illustrate Kendall's Tau for each of the four phases of the data.

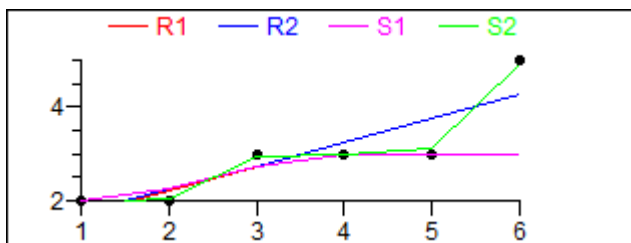


Figure 47 Kendall's Tau – Trendedness – Mary, Receptive, Phase 1.

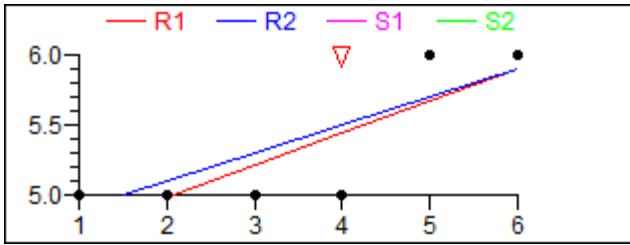


Figure 48 Kendall's Tau – Trendedness – Mary, Receptive, Phase 2.

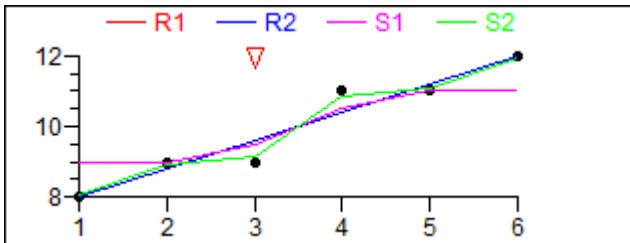


Figure 49 Kendall's Tau – Trendedness – Mary, Receptive, Phase 3.

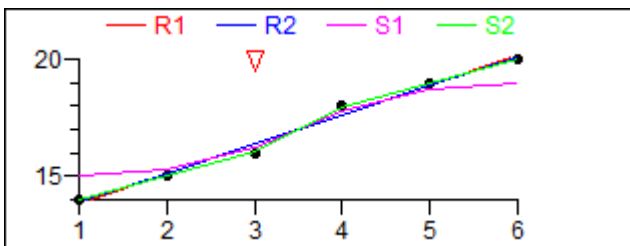


Figure 50 Kendall's Tau – Trendedness – Mary, Receptive, Phase 4.

Overall, Tau nonoverlap indicated some success of the intervention on increasing acquisition of the target receptive vocabulary words. Trendedness suggests that for any given phase, between 53% and 100% of the data (acquisition of receptive vocabulary) increase during each phase. Visual Analysis through the use of mean lines, suggests a slight increase in receptive vocabulary acquisition overall; however, increases made were not as high as those suggested by “ideal data.” Based on Visual and Statistical Analysis, it appears that the intervention was somewhat successful at increasing Mary’s acquisition of the target receptive vocabulary words.

Child 6 – Laura. Laura obtained a standard score of 128 on the PPVT-IV when this assessment was given at pretest which means that she performed as well as or better than 97% of her same aged peers on this test. She obtained a standard score of 129 on the post-test suggesting that she performed as well as or better than 97% of her same aged peers.

Visual analysis of Laura’s graphed data was used to determine whether the intervention had resulted in incremental increases in learned receptive vocabulary (Figure 58). The visual analysis was based on observations of trend, intercept gap, mean, slope, and level. First, in order to enhance visual analysis, mean lines were applied to the data. Mean lines were used to visually examine and compare mean levels of data (Morgan & Morgan, 2009).

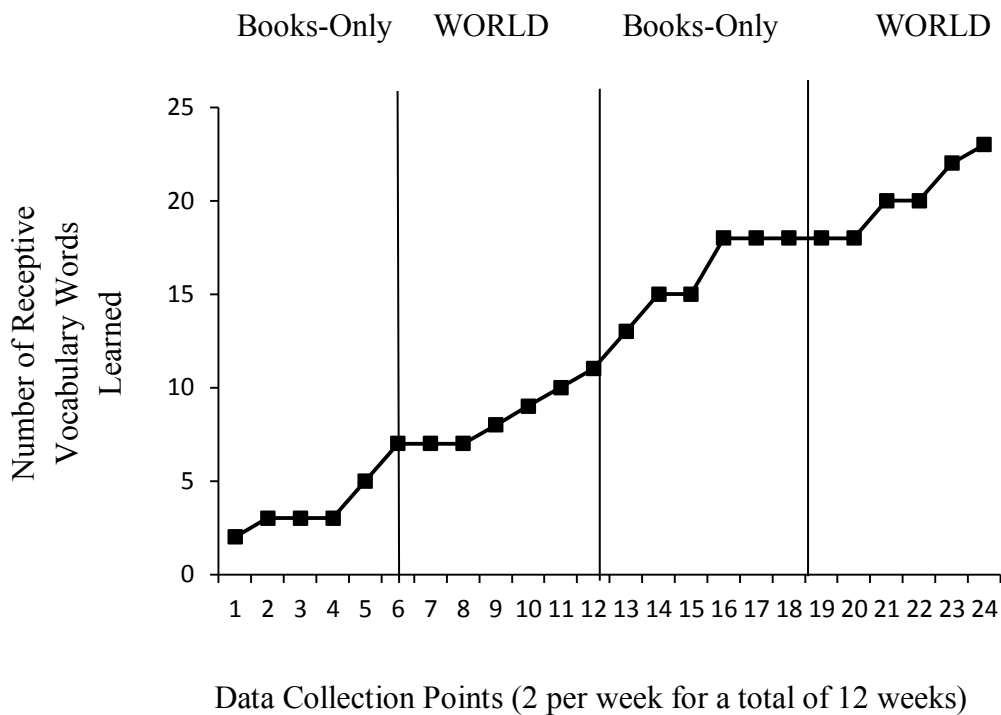


Figure 51 Child 6 – Laura

Next, Tau-U nonoverlap analyses were conducted. Tau-U is a measure of the amount of separation between two sets or “clouds” of data (Parker, Vannest, Davis, & Sauber, 2011).

Analyses revealed for phase 1 and 2, a Tau of .91 indicating that 91% of the data between phases 1 and 2 were non-overlapping. The 2-sided p value indicates that there is a < .02 percent chance that these results were obtained by chance alone. A Tau-U nonoverlap percentage of .60 or less usually indicates minimal to no change. Thus, a

nonoverlap score of 91% indicates that this phase of the intervention is producing change in Laura’s receptive vocabulary acquisition between phase 1 and phase 2.

Analyses revealed for phase 2 and 3, a Tau of 1 indicating that 100% of the data between these phases were non-overlapping. The 2-sided p value indicates that there is a < .01 percent chance that these results were obtained by chance alone. Thus, a nonoverlap score of 100% indicates that this phase of the intervention is producing change in Laura’s receptive vocabulary acquisition between phase 2 and phase 3.

Analyses revealed for phase 3 and 4, a Tau of .78 indicating that 78% of the data between these phases were non-overlapping. The 2-sided p value indicates that there is a <.2,>.1 percent chance that these results were obtained by chance alone. A nonoverlap score of 78% indicates that this phase of the intervention is producing some change in Laura’s receptive vocabulary acquisition between phase 3 and phase 4. Table 27 below provides a summary of the Tau-U nonoverlap analyses.

Table 27 Laura, Receptive Vocabulary, Tau-U Nonoverlap

	Tau nonoverlap	Mean phase a	Median phase a	Mean phase b	Median phase b	2-tailed P value
Phase 1a and 2b	0.91	3.17	2.0	7.00	7.0	P<.02
Phase 2a and 3b	1	7.00	7.0	13.17	13.0	P<.01
Phase 3a and 4b	.78	13/17	13.0	16.00	16.0	P<.2,>.1

Trend was also estimated via Kendall's Tau for both the baseline and intervention phases of the data. Results for Kendall's Tau for receptive vocabulary for phase 1 indicated that 100% of data in phase 1, 47% of data in phase 2, 100% of data in phase 3, and 60% of data in phase 4 goes up over time for learned receptive vocabulary. The figures below (59, 60, 61 and 62) (generated by WinPepi) illustrate Kendall's Tau for each of the four phases of the data.

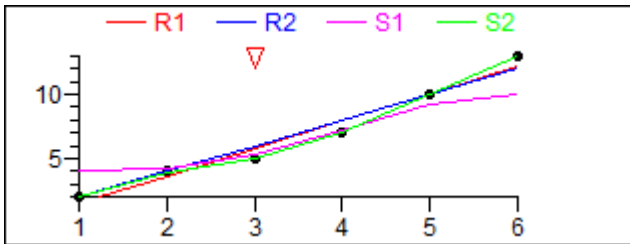


Figure 52 Kendall's Tau – Trendedness – Laura, Receptive, 1.

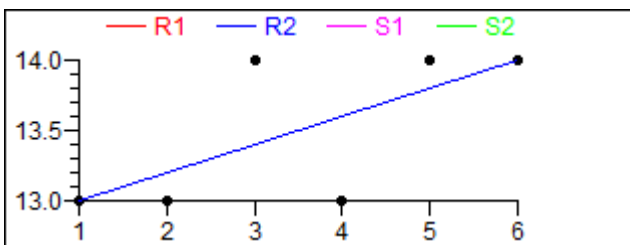


Figure 53 Kendall's Tau – Trendedness – Laura, Receptive, 2.

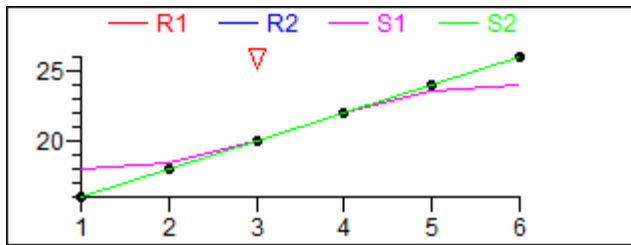


Figure 54 Kendall's Tau – Trendedness – Laura, Receptive, 3.

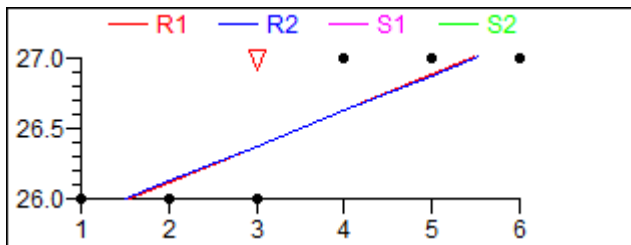


Figure 55 Kendall's Tau – Trendedness – Laura, Receptive, 4.

Overall, Tau nonoverlap indicated some success of the intervention with regard to increasing acquisition of the target receptive vocabulary words. Trendedness suggests that for any given phase, between 47% and 100% of the data (acquisition of receptive vocabulary) increase during each phase. Visual Analysis through the use of mean lines, suggests an increase in receptive vocabulary acquisition overall. Analyses indicated that Laura began the study with some knowledge of the vocabulary words which began an upward trend because of her current level of vocabulary acquisition. Her parents

indicated that they read to her every night before bedtime and that she enjoys reading very much. Based on Visual and Statistical Analysis, it appears that the intervention was somewhat successful at increasing Laura’s acquisition of the target receptive vocabulary words.

The table below (table 28) summarizes participants’ pretest and posttest scores on the standardized expressive and receptive vocabulary measures and the researcher developed expressive and receptive vocabulary measures.

Table 28 Pretest and Posttest Measures for all Participants

Measure	Pretest	Posttest
EVT-2		
Mean Standard Score	92	96
Average SD	9	10
PPVT-IV		
Mean Standard Score	99	102
Average SD	12	13
RDEPVT		
Mean # of Words	6	16
Average SD	3	5
RDRPVT		
Mean # of Words	12	22
Average SD	4	3

Research Questions 3 & 4

Do the different conditions, Project WORLD parent-delivered shared reading curriculum intervention and the parent-delivered shared reading “books only” (shared reading curriculum taken away) intervention condition produce different rates or speeds of vocabulary acquisition for *expressive* and *receptive* vocabulary? Rates of vocabulary acquisition varied between participants with regard to baseline levels of vocabulary knowledge as measured via the PPVT-IV and EVT-2 and researcher developed measures that included all target expressive and receptive vocabulary words. While some children gained more than others, the results of the researcher developed measures indicated that all children did gain with regard to expressive and receptive vocabulary acquisition. Overall, the rate of acquisition was greater for receptive vocabulary words than for expressive vocabulary words. This was anticipated based on similar results obtained by researchers from studies examining acquisition of expressive and receptive vocabulary words (e.g., Gonzalez, Pollard-Durodola, Simmons, Taylor, Davis, Kim, & Simmons, 2011). The table below (Table 29) includes a comparison of the overall percentages of expressive and receptive vocabulary words learned for each participant during the Project WORLD intervention phases and the “books only” (business-as-usual) condition. For example, with pretest results considered, John correctly identified 26% of the expressive vocabulary words and 37% of the receptive vocabulary words using the WORLD intervention condition and 7% of the expressive vocabulary words and 11% of the receptive vocabulary words using the “Books-Only” condition. Words that John knew at pretest were not included in the percentage of words learned.

Table 29 Comparison of the Overall Percentages of Receptive and Expressive Vocabulary Words Learned for Each Participant during the Project WORLD Intervention Condition and the “Books Only” (Reading-As-Usual) Condition.

	% of <i>Expressive</i> Vocabulary Acquisition <u>WORLD</u> <u>Intervention</u> Condition Phases	% of <i>Expressive</i> Vocabulary Acquisition <u>“Books- Only”</u> Condition Phases	% of <i>Receptive</i> Vocabulary Acquisition <u>WORLD</u> <u>Intervention</u> Condition Phases	% of <i>Receptive</i> Vocabulary Acquisition <u>“Books- Only”</u> Condition Phases	% of Difference Between <i>Expressive</i> Vocabulary Acquisition WORLD vs Books Only	% of Difference Between <i>Receptive</i> Vocabulary Acquisition WORLD vs Books Only
Partic ipant 1 John	26%	7%	37%	11%	19%	4%
Partic ipant 2 Jacob	19%	0%	26%	4%	19%	22%
Partic ipant 3 Clide	26%	4%	67%	0%	22%	67%
Partic ipant 4 Came ron	7%	22%	15%	4%	15%	11%
Partic ipant 5 Laura	30%	30%	19%	19%	0%	0%
Partic ipant 6 Mary	22%	19%	26%	14%	3%	12%
Aver age	22%	15%	32%	9%		

Post-Test and Follow-Up

Post-test data was obtained via a questionnaire (see Appendix C) that was filled out by each participant's parent. This subjective evaluation (Kazdin, 1978; Wolf, 1978) was used to gather information about parent's perceptions of a dimension of the procedures and outcomes of the study. All parents of the participants believed that the time that the study took was either reasonable or very reasonable (given five choices on a Likert scale). One parent indicated that she did not read to her child at home before the shared reading project began, four parents indicated that before the study, they read to their children 1-2 times per week and one parent indicated that she read to her child 3-5 times per week. All stated that they would continue to read to their children at home after the study ended.

Follow-up data was obtained via a questionnaire (see Appendix D) that was filled out by each participant's parent. Overall, participant's parents indicated that since the end of the study they had been reading a weekly average of 2-5 books to their child. They read each book, on average, 1-2 times to their child and asked an average of 6-10 questions per reading. When asked to complete fill-in-the-blank questions with regard to examples of the kinds of questions that they ask their child during the shared-reading (since the intervention ended), parents tended to report asking their child more labeling questions (e.g., What color is that? What kind of animal is that?, etc.). One parent indicated asking complex questions that elicit critical thinking by listing the following examples: "What do you think will happen next?" and "Have you ever gone swimming

like him?” Feedback indicated that parents generally liked implementing the shared reading intervention. One parent reported that her favorite aspect of the intervention was the audio-recordings, while two others indicated that they would have liked the intervention more if they did not have to audio-record a reading each week. While all parents reported continued involvement in parent-child shared-reading since the study ended, half of the parents reported that since the intervention has ended, they read to their child at a specific time each day and half reported that they do not have a specified reading time each day and that they participate in shared-reading whenever there is time.

CHAPTER V

DISCUSSION AND CONCLUSIONS

The purpose of this study was to compare whether a researcher-developed parent-delivered shared reading intervention (Project WORLD) designed to accelerate science and social studies content-related vocabulary differed from a business-as-usual (BAU) plus books comparison condition in terms of vocabulary acquisition. The comparison was made through the use of a single case research withdrawal design (Richards, Taylor, Ramasamy, & Richards, 1999) with cumulative frequency (Griffith, 2009). Six parent-child dyads completed the shared reading intervention each acting as their own control as they alternated between participation in this intervention and a business-as-usual plus books comparison condition in order to demonstrate the effects of the Project WORLD shared reading intervention.

The first two study questions examined whether the Project WORLD intervention and the “books only” condition produced differential effects on acquisition of expressive and receptive vocabulary. Relative to the first research question, does participation in the parent-delivered Project WORLD shared-reading intervention produce higher rates of expressive vocabulary acquisition compared to the parent-delivered “books only” condition, results were affirmative. Consistent with the literature, larger effects were found during both the Project WORLD intervention and the “books only” condition for participants’ acquisition of the target receptive vocabulary words than for acquisition of the target expressive vocabulary words. This

result is consistent with the findings of a meta-analysis by Mol et al. (2008). In that study, sixteen home-based book reading studies were examined to investigate the effect of interactive dialogic shared book reading on the expressive and receptive vocabulary development of young children. Expressive vocabulary yielded a *Cohen's d* effect size of 0.22 and receptive vocabulary yielded a *Cohen's d* effect size of .59. Further, differential effects were found for the Project WORLD intervention outcomes and the “books only” condition outcomes. Results of the current study revealed that for expressive vocabulary outcomes, four of the six participants correctly identified more (average of 20% more) target expressive vocabulary words during participation in the WORLD intervention than during use of the “books only” condition, one participant identified more target expressive vocabulary words in the “books only” condition and one participant identified equal target expressive vocabulary words during the Project WORLD intervention and the “books only” condition.

Relative to the second research question, does participation in the parent-delivered Project WORLD shared-reading intervention produce higher rates of receptive vocabulary acquisition compared to the parent-delivered “books only” condition, results were also in the affirmative. Results for receptive vocabulary outcomes revealed that five of the six participants correctly identified more (average of 28% more) target receptive vocabulary words during use of the WORLD intervention compared to the “books only” intervention. Additionally, one participant experienced equal acquisition of target receptive vocabulary words for both the Project WORLD intervention and the “books only” condition. While in absolute terms, more expressive and receptive

vocabulary words were learned during the WORLD intervention condition, during enrollment in the comparison condition, participants made some gains as well.

Relative to both research questions, as hypothesized, when the WORLD curriculum was used, participants' knowledge of the target vocabulary words generally increased more than during the "books only" condition. Through the WORLD curriculum, parents were guided with a script that included questions to ask about the story (specifically, with regard to the target vocabulary words) and involvement in the "books only" condition consisted of parents reading a story to their child as they usually would without a supplemental script that included questions to be asked. These results are consistent with those from Mol et al. (2008) that indicated that increased/strengthened effects of interactive shared book reading can emerge from enhanced conversation between parents and children during reading sessions. Both the exposure to a story and the active involvement of the child elicited through, for example, parent questions (especially elaborative questions, inferential questions, prediction questions all present in the WORLD shared-reading intervention), have been found to strengthen/increase the effects of shared book reading interventions (Mol et al., 2008). For example, in the Mol et al. meta-analysis, studies by Whitehurst, Falco, Lonigan, Fischel, Crone, & Fischel (1994) and Blom-Hoffman, O'Neill-Pirozzi, Volpe, Cutting, & Bissinger (2006) found better outcomes for children when parents were trained in interactive shared reading techniques (i.e., asking open ended questions, etc.) in comparison to control groups. Three important meta-analyses have synthesized this work (Bus, van Ijzendoorn, & Pelligrini, 1995; Mol, Bus, de Jong, & Smeets, 2008; National

Institute for Literacy, 2008) and found, in general, that parent-delivered shared reading interventions are overall, modestly effective for optimizing young children's emergent literacy skills (in particular, oral language skills) and that results can be found for parent-child shared reading when parents are trained on interactive techniques of shared book reading.

Results also supported much of the theorizing by Vygotsky (1978) and neo-Vygotskian views of development (Rogoff, 1990; Tharp & Gallimore, 1988) as noted in the literature review. Findings from the present study can be situated within many of the concepts outlined by Vygotskian theorists. Specifically, parent's use of elaborative, cognitively complex conversations around shared-reading, especially during the WORLD condition exposed children to multiple and rich opportunities to participate in activities that were beyond their own pre-literacy abilities which likely advanced their development of target vocabulary skills (Neuman, 1996). Using Vygotsky's framework, one can reasonably assume that mothers in the WORLD condition, through the use of cognitively complex questioning, supported their children's acquisition of science and social studies vocabulary, through judicious review, scaffolding, prompting background knowledge, and multiple opportunities to practice language—each stretching a child's ability beyond that which could be done independently without adult guidance. It is also possible that through the use of scaffolding, children's abilities were further enhanced as they learned vocabulary that mapped into conceptual science and social studies networks of words (e.g., what water does). In addition, findings were also consistent with Rogoff's (1990) emphasis on the importance of face to face interactions. Children

participating in the WORLD condition, according to Rogoff, were “apprentices” as active participants in their literacy environment. Both Vygotsky’s theory and Rogoff’s supplement can reasonably fit the findings in the present study in terms of how children’s vocabulary acquisition can be explained. The ways in which both the adult and child contribute to the child’s literacy development are important for understanding how children move through the ZPD (Bruner, 1983; Rogoff, 1990). Both theories provide a theoretical and conceptual framework for understanding the benefits of shared book reading, especially rich shared book reading that targets high priority vocabulary use methods that scaffold language acquisition and provide cognitively complex conversation around words that build conceptual knowledge.

In addition to examining whether the WORLD intervention and the “books only” condition differed in terms of total vocabulary acquisition, the study also examined the rate of vocabulary acquisition. The average percentage for target expressive vocabulary words in the WORLD condition that participants learned was 22% while the average percentage of acquisition for target receptive vocabulary words in the WORLD intervention condition that participants learned was 32%. On the other hand, the average percentage of expressive target vocabulary words in the “books only” condition that participants learned was 15% and the average percentage of acquisition for receptive target vocabulary words in the “books only” condition was 9%. These overall results were anticipated based on similar results obtained by researchers from studies examining acquisition of expressive and receptive vocabulary knowledge that found a higher

acquisition of receptive vocabulary as opposed to expressive vocabulary (e.g., Mol et al., 2008).

In summary, the findings were consistent with a wealth of experimental and correlations studies demonstrating the utility of shared book reading that goes “beyond” simply reading to a child but engages children in cognitively complex conversations that target high utility words that also build background conceptual knowledge of important concepts and themes. Children come naturally curious about the way the world works and capitalizing on this curiosity through opportunities for rich language interaction around books is consistent with what is known about how children acquire language. Finding of this study support rich and cognitively complex conversations through shared book reading as an important instructional method to facilitate language and literacy development in young children.

Limitations

It is important to note that there were limitations to the present work. To begin with, a potential limitation regarding the validity of the study will be explained. While the primary researcher checked-in with parents of participants weekly and parents completed validity checklists for each reading session, only one reading was audio taped per week. Based on this, there remains a possibility that parents may not have read the books as instructed on the days that they were not audio taped. Or they may have read the books haphazardly thus threatening the internal validity of the study.

Another limitation of this study lies in generalizability to a larger and more diverse population. The current study utilized a small sample size (six parent-child

dyads). Utilization of this small sample size leaves open the possibility that the study may not generalize to a larger sample of more diverse participants. We must go beyond asking whether shared book reading is effective to understanding the conditions and contexts under which it is most effective (Teale, 2003).

In addition, there is a possibility that due to the length of the study (twelve weeks), some children may have learned a few of the target vocabulary words during the study through natural exposure, and not as a result of the study (i.e., maturation threat to validity). Thus, because the same set of books was read twice over a period of six weeks, even while the counterbalanced nature of the study was designed to control for this, there is a possibility that additional exposure to the vocabulary words may have had an effect on the vocabulary acquisition resulting in carry-over and order effects.

The study also contained a limitation in that all parents, including those who were starting in the books-only condition, were trained initially (prior to the beginning of the study) thus introducing a possible contamination bias (e.g. parents knew the WORLD intervention although they were starting in the books-only (reading as usual) condition). This initial training for both WORLD intervention and books-only condition likely contaminated the data collected for parents when they were participating in the “books-only” condition as this prior exposure could have led to parents utilizing some of the questioning techniques during the “books only” reading as usual condition that they were instructed to use during participation in the WORLD condition. This bias could have impacted the results and might explain why there was some growth for some children even during the control condition. For example, results for Cameron seemed to

show vocabulary acquisition in the “books-only” (reading as usual) condition compared to the WORLD curriculum intervention condition. It might be the case that these results were generated because Cameron’s mother used strategies learned through the WORLD curriculum intervention during the “books only” reading as usual condition. However, even had the training on the curriculum intervention not been conducted prior to the beginning of the study, there is a chance that this contamination would have taken place during at least some of the phases due to the necessity for counterbalancing participation in the conditions to control for exposure effects with regard to the vocabulary words.

Implications

There are several implications for effective practices with regard to vocabulary development in preschoolers. The results of this study are consistent with research documenting that parents are more likely to use more cognitively complex interactions with children (e.g., scaffolded reading techniques such as in the WORLD project) with training (e.g. Ahtola & Heimi, 2003; Laasko, Poikkeus, & Lyytinen, 1999). Parents given the WORLD curriculum script (guidance supplied) applied reading techniques (e.g., asking complex and open-ended questions about the story) and those in the “books-only” condition, where a curriculum script was not provided, did not utilize them at all or as often. It appeared that from the audio-taped recordings (during the “books only” condition) and the follow-up responses, while parents may have understood the importance of asking questions during shared reading, they were not able to deduce how to ask complex questions of their children without the use of a curriculum since they had not had specific training on how to use complex questions (e.g., absence of guidance on

how to question). In addition, research has shown that natural reading styles (occurring without training), specifically among low income families, tend to focus on low cognitively demanding interactions such as labeling questions or requesting picture descriptions rather than interactions that require the child to engage in more higher-order thinking processes (Hammer, Nimmo, Cohen, Drahein, & Johnson, 2005). This was consistent with the information derived from a follow-up questionnaire used in the present study.

The questionnaire asked parents to list the kinds of questions they ask their child when they read to them. The questions that they listed included labeling questions and questions that did not engage their child in higher-order thinking processes. Research has shown that labeling questions typically only require a “one-word” response (e.g., yes, no) and therefore are less cognitively complex and less likely to invite dialogue (Zucker et al., 2010). It appeared from the study results, that when parents used the WORLD curriculum which included asking complex questions about targeted vocabulary words, most children correctly identified a larger percentage of the target vocabulary words compared to when the guided practices were not used (i.e., “books-only” reading-as-usual condition). Thus, this study suggests that the participating “books-only” parents did not spontaneously read in ways that optimize children’s language and literacy. This study lends support to the literature indicating that parent training to instruct parents on how to adopt interactive reading styles and techniques to build background knowledge and vocabulary enhances the positive effects of shared reading (Reese, Sparks, & Leyva, 2010).

The current study found that intensive shared book reading was effective at increasing young children's knowledge of target vocabulary, and thus, that time allocated to cognitively complex questioning on high priority words did produce change. The importance of the use of cognitively complex questioning has been shown through research (e.g., Zucker et al., 2010) as a means to improve the instructional quality of conversations that parents have with their children thereby accelerating language development. Consequently, because at-risk children begin school with limited background knowledge, vocabulary instruction (and training for parents on this) may require explicit instruction that aids children in making connections between content-area knowledge, vocabulary words and real life. One way that a parent might start an instructional discussion during shared-reading about the word "lightning" might be by asking their child if they remember seeing the lighting in the sky on the way home from the grocery store yesterday. As such, based on these study findings, it will be important for parents and teachers alike to integrate opportunities to read books with extended talk about words, concepts, and their connections to real life.

Recommendations for Future Research / Conclusions

To begin with, and in order to validate the findings of this study, a replication study with a larger population is strongly recommended. Children who come from economically disadvantaged backgrounds are especially at risk for beginning and remaining behind their peers in school. Thus, it would be particularly important to continue to pay attention to baseline levels of vocabulary and literacy-related practices, including shared-reading practices in the home environment to understand the child's

home literacy environment as it correlates with their vocabulary knowledge and development.

This study has also shown that shared-reading, in particular, through participation in a dialogue-rich curriculum, can impact the acquisition of target vocabulary words. This leads into the idea that engagement in shared-reading over a longer period of time is likely to produce more or even richer vocabulary development. Thus, future research should also include longitudinal shared-reading studies.

Further, results of this study found, consistent with the literature, that most parents do not apply scaffolded reading techniques without training (e.g. Ahtola & Heimi, 2003; Laasko, Poikkeus, & Lyytinen, 1999). These kinds of techniques were applied by parents through the WORLD intervention when a curriculum was supplied and they were rarely applied when parents were not given guidance from a curriculum. Following this, future research should examine the impact and types of education and training for parents with regard to shared reading and implementation of shared-reading techniques.

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APPENDIX A

RECRUITMENT LETTER

Principal Investigator: Amber Simek

Faculty: Jorge Gonzalez, Ph.D.

Project Title: Effects of a Parent-Delivered Shared Reading Intervention on Preschoolers' Vocabulary Knowledge

Dear Head Start Parents,

I would like to offer you the opportunity to participate in a project that helps parents read with their children. The skills and especially knowledge about vocabulary words that children need to help them read and write are learned before they begin school. Reading at home is one of the main ways you can help these skills and vocabulary knowledge develop and to help prepare your preschooler for Kindergarten. This project is part of a research study that helps to teach parents about techniques that can be used during reading to prepare children for Kindergarten.

What will parents and preschoolers be asked to do?

You will learn about techniques to help your child benefit from shared reading (reading with you ☺). These tips will include things like asking questions about the book and what your child learned from it. The program will last about 12 weeks. During this time, you will be asked to read books to your child at home. You will receive 2 books per week; and you will be asked to read to your child 4 days per week (*Read book 1: Monday and Tuesday, Read book 2: Wednesday and Thursday*). (You will get to keep the books for participation in the study! ☺). You will also be asked to attend two training sessions and meet at the Early Head Start center to pick up and drop off materials weekly.

1) Before the study begins

a. Informed consent and gathering information: You will be given detailed information about the project and asked to sign a consent/permission form for you and your child if you choose to participate. You will also be involved in assessment activities such as completing questionnaires about your background and your child will be involved in tests of vocabulary knowledge and concept knowledge. The testing of vocabulary knowledge and concept knowledge for your child will take place at your child's Head Start center and will take about 1 hour.

2) **During the study** we will meet with your child in their Head Start classroom two times per week to give quick (5-10 minute) assessments (tests) of vocabulary knowledge.

3) **After the study** your child will be involved in tests of vocabulary knowledge and concept knowledge at the end of the project (about 1 hour) at your child's Head Start center

A lot of the skills and especially vocabulary words that children need to help them read and write are learned at home -- before they begin school. You play a very important role in your child's success in school. I hope you will consider being a part of this program! If you have any questions please call Amber Simek at XXX-XXX-XXXX.

If you are interested in learning more about the project, an informational meeting will be held where parents can ask questions about the project and find out more about what a parents' role in the project is. At this meeting, you will also have the option to sign consent forms if you would like to participate in the project.

Meeting

Date:

Place:

Time:

If you are unable to attend this meeting, but would like additional information about the project or to talk about setting up another time to meet, please call Amber Simek at XXX-XXX-XXXX.

APPENDIX B

DEMOGRAPHIC SELF-REPORT QUESTIONNAIRE

Principal Investigator: Amber Simek

Faculty: Jorge E. Gonzalez, Ph.D.

Project Title: Effects of a Parent-Delivered Shared Reading Intervention on Preschoolers' Vocabulary Knowledge

**** This information will be used for research purposes only. Identifying information will not be connected back to you.**

Your name: _____

Your preschool child's name: _____

1. What is your age?

- 20 or younger
- 21-30
- 31-40
- 40-50
- 50 or older

2. What is your gender?

- Male
- Female
- Other

3. What is your race/ethnicity?

- Asian
- Black, African American
- Hispanic, Latino
- White
- Bi-Racial/Multi-Racial (Please specify) _____
- Other (Please specify) _____

3. What is the primary language that is spoken in your home? _____

4. Are other languages spoken in your home?

- Yes -- Please list language(s) _____
- No

5. How many children's books do you have in your home?

6. How many times per week do you read to your preschool child at home?

APPENDIX C

POST-TEST QUESTIONNAIRE

Post-Test

- 1) **Did you think that the time that it took to implement the intervention (reading 4 times per week) was reasonable?**

1 = Very Reasonable; 2 = Reasonable; 3 = Indifferent; 4 = Somewhat Reasonable; 5 = Not Reasonable at All

- a. 1
- b. 2
- c. 3
- d. 4
- e. 5

- 2) **How many times per week did you read to your child before the beginning of the intervention?**

- a. None
- b. 1-2
- c. 3-5
- d. 6-10
- e. 10 or more

- 3) **If you did not read at all or did not read as much as you would have liked to, why?**

- a. There is not enough time
- b. The child does not have enough books
- c. The child does not want to read
- d. I do not enjoy reading

- 4) **Since you have completed the shared reading intervention study, would you like to continue reading to your child?**

- a. Yes
- b. No

- 5) **If you answered *no*, why not?**

- a. There is not enough time
- b. The child does not have enough books
- c. The child does not want to read
- d. I do not enjoy reading

APPENDIX D

FOLLOW-UP QUESTIONNAIRE

Follow-Up

Shared Reading

Parent Name: _____

Date: _____

Child's Name: _____

- 1) **How many times per week do you read to your child at home?**
 - a. We do not read at home
 - b. 1-2
 - c. 2-5
 - d. 6-10
 - e. 10 or more

- 2) **If you read to your child at home, how many books do you read each week?**
 - a. We do not read at home
 - b. 1-2
 - c. 2-5
 - d. 6-10
 - e. 10 or more

- 3) **If you read to your child at home, how many times do you read each book?**
 - a. No books are re-read
 - b. 1 time
 - c. 2 times
 - d. 3 times
 - e. More than 3 times

- 4) **If you and your child read books together, about how many questions do you ask your child during the shared reading of one book?**
 - a. 0-1
 - b. 2-3
 - c. 3-5
 - d. 6-10
 - e. 10 or more

- 5) **If you ask questions to your child during the shared reading, please list three examples of questions that you ask your child during the shared reading.**
 1. _____

2. _____

3. _____

6) When do you read with your child at home?

- a. Reading never occurs at home
- b. There is no specific reading time – reading occurs whenever there is time
- c. Reading always occurs at one (or two) specific time(s) per day (for example: before bedtime or after dinner, etc.)

7) Did you like implementing this shared reading intervention with your child?

1 = I liked it very much; 2 = I liked it; 3 = Indifferent; 4 = I did not like it ; 5 = I did not like it at all

- a. 1
- b. 2
- c. 3
- d. 4
- e. 5

8) Can you think of anything that would have made you like doing the shared reading intervention more? (Please list)

9) If you could change something about the implementation of the shared reading intervention, what would it be? (Please list)

10) What did you like about the implementation of this shared reading intervention? (Please list)