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An Investigation of the Additive Benefits of Parent Dialogic Reading Techniques in Older Preschool Children

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AN INVESTIGATION OF THE ADDITIVE BENEFITS OF
PARENT DIALOGIC READING TECHNIQUES IN
OLDER PRESCHOOL CHILDREN

A Dissertation

Submitted to the School of Education

Duquesne University

In partial fulfillment of the requirements for
the degree of Doctor of Philosophy

By

Sarah O'Neill Switalski

December 2012

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Sarah O'Neill Switalski

2012

DUQUESNE UNIVERSITY
SCHOOL OF EDUCATION
Department of Counseling, Psychology and Special Education

Dissertation

Submitted in Partial Fulfillment of the Requirements
For the Degree of Doctor of Philosophy (Ph.D.)

School Psychology Doctoral Program

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October 22, 2012

AN INVESTIGATION OF THE ADDITIVE BENEFITS OF
PARENT DIALOGIC READING TECHNIQUES IN
OLDER PRESCHOOL CHILDREN

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ABSTRACT

AN INVESTIGATION OF THE ADDITIVE BENEFITS OF PARENT DIALOGIC READING TECHNIQUES IN OLDER PRESCHOOL CHILDREN

By

Sarah O'Neill Switalski

October 2012

Dissertation supervised by Dr. Kara E. McGoey

This study examined the additive benefit of parent dialogic reading techniques in older, high-risk preschool children using multiple baseline design across participants, a single subject research design, as well as pre-test and post-test measures. Five preschoolers age-eligible to begin kindergarten the following school year participated. The Peabody Picture Vocabulary Test, Fourth Edition (PPVT-4) and Expressive Vocabulary Test, Second Edition (EVT-2) were administered pre-intervention and post-intervention implementation. Consistent with multiple baseline design, all students received weekly progress monitoring using the Picture Naming (PN) Individual Growth and Development Indicator (IGDI) throughout the entire investigation. Caregivers received in-person video-based training in dialogic reading techniques. They were then directed to implement dialogic reading strategies within their homes when reading with

their children a minimum of three times per week for fifteen minutes per session over a six-week intervention period. It was hypothesized that children receiving home-based dialogic reading support would demonstrate greater expressive and receptive vocabulary skills than those participating in preschool program alone. Visual analysis of graphic data within conditions and between adjacent conditions was utilized to analyze the research questions. Results of the study supported the hypotheses but did not confirm them. Children who received home-based dialogic reading support demonstrated expressive and receptive vocabulary skill growth but no abrupt change occurred immediately after introducing the dialogic reading intervention.

ACKNOWLEDGMENT

Although multiple drafts of this section of my dissertation have been written in an attempt to convey my profound gratitude, I am certain the following text is woefully inadequate. With that limitation recognized, I would like to thank the chair of my dissertation, Kara McGoey, Ph.D., and my committee members, Ara Schmitt, Ph.D., and Jennifer Salaway, Ph.D., for their support, encouragement, and expertise throughout this process. I would also like to express gratitude to the Allegheny Intermediate Unit and Duquesne City School District for providing the opportunity to conduct this research project. Special thanks are extended to the program staff for their support throughout the duration of this investigation. Finally, I would like to extend the deepest of thanks to my loved ones, without whom the completion of this journey would have been impossible. This dissertation is dedicated to them.

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Chapter 1: Introduction

The importance of developing adequate reading ability cannot be understated. In fact, demonstrating competent reading skills has been described as, “perhaps the single most important skill a child can acquire” (Primavera, 2000, p. 86). According to Daly, Chafouleas, and Skinner (2005), reading is at the foundation of most other subjects taught in school as well as most of the activities in which one engages after formal education has been completed. Furthermore, the authors assert that reading problems can have an “extremely adverse” effect on an individual’s overall quality of life (Daly, Chafouleas, & Skinner, 2005, p. 2). For example, poor reading ability can restrict one’s employment opportunities as well as one’s ability to pursue additional education. Reading problems may also limit an individual’s access to many recreational pursuits, such as reading for pleasure, and daily functioning, such as preparing a meal by following a recipe. Despite the well-known nature of the ramifications of unsuccessful reading development, it remains a societal problem experienced by many.

The various factors contributing to the process of reading development, including pathways leading to fluent reading and risk factors associated with poor reading, have been studied extensively (Senechal & LeFevre, 2002). Socioeconomic status (SES) is arguably one of the most pervasive influences on a child’s development, and low-SES can negatively influence all developmental processes, including reading (Bradley & Corwyn, 2002; Hecht, Burgess, Torgesen, Wagner, & Rashotte, 2000; Lonigan, Burgess, Anthony, & Barker, 1998). Research examining the process of reading development within this at-risk population has provided researchers and educators with a better understanding of protective factors related to typical reading development.

Significance of the Problem

Data collected by the National Center for Educational Statistics provides one medium for assessing the magnitude of reading problems within the United States. As of 2011, 33% of all fourth-grade students and 24% of all eighth-grade students read at “Below Basic” levels (NCES, 2011). These percentages increase when the focus is limited to students whose family income meets guidelines for participation in the National School Lunch Program. Specifically, 35% of all fourth-graders who are eligible for reduced-price lunch and 50% of those eligible to receive free school lunch read at “Below Basic” levels. Similarly, the percentage of eighth graders reading at “Below Basic” levels rises to 26% and 38%, according to eligibility for reduced-price and free lunches, respectively.

Examination of “Proficient” level statistics is equally significant. Of fourth-graders who are income-eligible to participate in the National School Lunch Program, only of 27% (reduced-price lunch) and 17% (free lunch) read at or above the “Proficient” level. Of eighth graders, only of 26% (reduced-price lunch) and 17% (free lunch) read at or above the “Proficient” level. Furthermore, despite increased awareness and various efforts to address this problem at the legislative level (e.g., No Child Left Behind) no significant increases in reading proficiency occurred between 2009 and 2011. The percentage of all students in the fourth grade reading at or above proficient levels increased from 33% to 34% across this two year span, and the percentage of all eighth-graders reading at this level increased from 32% in 2009 to 34% in 2011 (NCES, 2011).

Comparisons between students whose economic status qualifies them to receive free or reduced lunch and their economically-ineligible peers on measures of reading

achievement in fourth and eighth grades also yield negative statistical trends. A review of the percentage of students reading at or above “Proficient” levels results in the following findings: 48% of income-ineligible fourth-graders demonstrate proficient reading compared to only 27% of fourth-graders eligible for reduced-price lunches and 17% of fourth graders eligible for free lunch (NCES, 2011). Similarly, 45% of income-ineligible eighth-graders demonstrate proficient reading compared to only 26% of eighth-graders eligible for reduced-price lunches and 17% of eighth graders eligible for free lunch.

Overall, the aforementioned statistics fully illustrate the need to understand what factors may be contributing to unsuccessful reading development within the United States and how to better intervene. Before discussion can turn to factors contributing to the manifestation of inadequate reading skills, one must fully understand typical reading development in children.

Theoretical Basis

Reading Development

Many prominent reading theories are founded on the premise that acquisition of this skill occurs through a series of successive skill-building stages beginning early in life and occurring within home and school environments (e.g., Chall, 1996). Expert review of the literature suggests that effective reading instruction is comprised of five core topics: phonemic awareness instruction, phonics instruction, fluency, vocabulary instruction, and text comprehension instruction (National Institute of Child Health and Human Development, 2000). The NICHD has also emphasized the importance of teacher education and preparation as well as the relationship between technology and reading instruction. Although there is some debate over the specific sequence of stages

aforementioned and whether these stages are universal and invariant, it is widely accepted that early reading skills directly contribute to the development of complex reading abilities later in the process (Christie, 2008). For example, without fully developed phonemic awareness skills (i.e., the ability to detect and manipulate sounds) and the ability to link print to sounds, reading comprehension growth will be limited. Low-SES has been linked to problems at all stages of the reading development process, from developing pre-reading phonological skills to mastering the skill of reading comprehension (e.g., Hect et al., 2000; Lonigan et al., 1998).

This developmental risk can be conceptualized by using bioecological theory (Bronfenbrenner, 1979). Bronfenbrenner's bioecological model stresses the importance of cumulative factors across systems that can foster or inhibit the development of skills. According to the organizational structure of this model, SES is a macrosystem-level factor that indirectly influences all aspects of a child's development, which includes reading. Although the complexity of this model makes identifying the specific factors through which SES influences reading development difficult, critical examination of the role played by parent or primary caregiver support warrants further investigation. According to Bradley and Corwyn (2002), developmental outcomes could be directly linked to SES, a co-occurring macrosystem level factor, or a combination of these influences. Development could also be impacted by a 'third variable' interconnected with SES (Bradley & Corwyn, 2002), a primary example of which is parental support.

Parent support is a highly influential factor within the SES-reading development relationship. Specifically, parental involvement has been identified as a primary protective factor in supporting low-SES reading development (Shaver & Walls, 1998;

Raffaele & Knoff, 1999). Rush (1999), Dodici and colleagues (2000), Hockenberger and colleagues (2000), Huebner (2000), Primavera (2000), and Bus and colleagues (1995) provide important information about the general role of parents and specific home-based literacy activities on the development of adequate reading skills in children with low-SES. Overall, these studies stress the foremost importance of supportive parents.

Specifically, the amount of parental involvement in the preschool/kindergarten years as well as the number of activities in which parents participated, are related to greater reading achievement, lower rates of grade retention, and fewer special education placements (Miedel & Reynolds, 1999). Furthermore, high levels of parental involvement have been found to buffer the effects of low maternal education on program success (Dearing et al., 2004). In addition to school involvement, research conducted by Rush (1999), Dodici and colleagues (2000), Hockenberger and colleagues (2000), Huebner (2000), and Primavera (2000) provide insight into the role of parents and specific home-based literacy activities on the development of adequate reading skills in children with low-SES.

The abovementioned results suggest that relatively simple intervention programs that provide parents with instruction on how to foster reading development within the home can positively influence the reading skill attainment of an especially at-risk population. However, poor literacy skills coupled with reading insecurity experienced by some parents with low-SES could prevent them from engaging in these crucial early literacy activities with their children, perpetuating the cycle of poor reading development. Therefore, intensive parent reading support appears critical.

In summary, parental support through involvement with the child's school or early learning center and parental support through parent-child interaction and shared reading activities within the home foster successful reading development in populations of children with low-SES. A home-based dialogic reading program involving parents addresses both of these findings. Specifically, early learning center involvement can be provided through center-based technique training and fidelity monitoring. In addition, the core feature of dialogic reading involves improved shared reading activities within the home environment, thus fostering home-based parental support to supplement instruction received in the school environment.

Relevant Literature

Dialogic reading is an interactive method of shared picture book reading that has been explicitly designed to foster language and literacy skills in young children (What Works Clearinghouse [WWC], 2007). This method is defined by structured shared reading activities where an adult questions the child and serves as his or her active listener. Numerous research studies have examined its efficacy and impact on developing learners as well as the various training methods that can be employed (e.g., Arnold et al., 1994; Blom-Hoffman et al., 2006a; Blom-Hoffman et al., 2006b; Huebner, 2000a; Huebner, 2000b; Huebner & Meltzoff, 2005; Whitehurst & Epstein, 1994; Whitehurst et al., 1988). Overall, the program has a history of creating positive changes in reading development (Huebner, 2000a), including in populations of children of low-SES, although additional research examining older children (i.e., preschoolers vs. toddlers) in at-risk environments is needed. In addition, videotape training provided in-person has

been found to yield successful outcomes, especially for parents with modest levels of formal education (Huebner & Meltzoff, 2005).

Fostering a parent's ability to support his or her child's reading development in the home can result in greater development of early reading skills in high-risk children with low-SES (Hockenberger et al., 1999; Huebner, 2000). Research also suggests parents who effectively engaged in mutual literacy activities were able to support the development of school readiness and emergent literacy skills in their preschool-age children (Primavera, 2000; Wood, 2002). The use of empirically supported reading development techniques involving parent-child interaction in the low-SES population is needed. Therefore, a multifaceted, intensive home- and school-based approach would likely yield the greatest gains for this at-risk group of early learners.

Problem Statement

Future research examining the impact of implementing early intervention strategies for students who are at risk for unsuccessful reading development is necessary. As the research summarized above suggests, the role of parental support in low-SES households is an area in need of additional exploration. Examining the interaction between parental support in the home and support provided in the early learning center would be an important step toward refining the needs of developing readers within low-SES populations. Therefore, the purpose of this study was to examine additive effect home-based caregiver use of dialogic reading techniques to supplemental early learning center instruction for low-SES preschool children.

Research Questions and Hypotheses

Research Question 1

Does the inclusion of home-based dialogic reading support result in greater expressive vocabulary skills for high-risk children than participation in a preschool program alone?

Hypothesis 1. High-risk children who receive home-based dialogic reading support will demonstrate greater expressive vocabulary skills than participation in a preschool program alone.

Research Question 2

Does the inclusion of home-based dialogic reading support result in greater receptive vocabulary skills for high-risk children than participation in a preschool program alone?

Hypothesis 2. High-risk children who receive home-based dialogic reading support will demonstrate greater receptive vocabulary skills than participation in a preschool program alone.

Chapter 2: Review of the Literature

Reading Development

Competent reading ability has been described as “perhaps the single most important skill a child can acquire;” therefore, the importance of developing this skill in contemporary American society cannot be understated (Primavera, 2000, p. 86). The various factors that contribute to this developmental process, including risk factors associated with poor reading development, have been studied extensively.

Socioeconomic status (SES), arguably one of the most pervasive influences on a child’s development, can influence all developmental processes, including academics, and reading specifically (Bradley & Corwyn, 2002; Hecht, Burgess, Torgesen, Wagner, & Rashotte, 2000; Lonigan, Burgess, Anthony, & Barker, 1998). Bronfenbrenner’s bioecological theory can be used as a scaffold to examine the influence of socioeconomic risk factors thought to contribute to inadequate reading skill development. This theoretical orientation was selected because it provides a structure for framing many complex environmental influences that can impact reading development. An overview of the reading development process is necessary before beginning to understand the role of various socioeconomic influences.

Reading Development: Current Societal Trends

As was briefly discussed in the introduction, the importance of successful reading development cannot be overstated. According to Daly, Chafouleas, and Skinner (2005), reading is at the foundation of most other subjects taught in school as well as most of the activities in which one engages after formal education has been completed. Furthermore, the authors assert that reading problems can have an “extremely adverse” effect on an

individual's overall quality of life (Daly, Chafouleas, & Skinner, 2005, p. 2). For example, poor reading ability can restrict one's employment opportunities as well as one's ability to pursue additional education. Reading problems may also limit an individual's access to many recreational pursuits, such as reading for pleasure, and daily functioning, such as preparing a meal by following a recipe. Despite the well-known nature of the ramifications of unsuccessful reading development, it remains a societal problem experienced by many.

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significant increases in reading proficiency occurred between 2009 and 2011. The percentage of all students in the fourth grade reading at or above proficient levels increased from 33% to 34% across this two year span, and the percentage of all eighth-graders reading at this level increased from 32% in 2009 to 34% in 2011 (NCES, 2011).

Comparisons between students whose economic status qualifies them to receive free or reduced lunch and their economically-ineligible peers on measures of reading achievement in fourth and eighth grades also yield negative statistical trends. A review of the percentage of students reading at or above “Proficient” levels results in the following findings: 48% of income-ineligible fourth-graders demonstrate proficient reading compared to only 27% of fourth-graders eligible for reduced-price lunches and 17% of fourth graders eligible for free lunch (NCES, 2011). Similarly, 45% of income-ineligible eighth-graders demonstrate proficient reading compared to only 26% of eighth-graders eligible for reduced-price lunches and 17% of eighth graders eligible for free lunch.

Overall, the aforementioned statistics fully illustrate the need to understand what factors may be contributing to unsuccessful reading development within the United States and how to better intervene. Before discussion can turn to factors contributing to the manifestation of inadequate reading skills, one must fully understand typical reading development in children.

Reading Development Theory

Reading development occurs over a series of progressive stages, which is common to many typically-occurring developmental processes. For example, a child learns to crawl, pull-up, toddle, walk, eventually culminating in learning to run. Numerous theories purport to explain the process of learning to read (e.g., Chall, 1993,

1996; Ehri, 1995). Although differences in the specific sequence of skill development exist, many theories agree that children learn to read through a developmental (i.e., successive skill building) process that begins early in life and occurs within home and school environments. In addition, the core components of the reading development process are consistent across many theories and include: alphabets (phonemic awareness and phonics), fluency, vocabulary, and comprehension (National Institute of Child Health and Human Development [NICHD], 2000).

Chall's Stages of Reading Development

Stage 0. Siegler and colleagues (2003) found that the stages of reading development proposed by Chall provide a comprehensive overview of this developmental process. Chall's first stage, "Stage 0" entitled, "Prereading" ranges from birth until the beginning of first grade and is the period in which children learn necessary reading prerequisites. Spanning time spent almost exclusively at home through preschool and kindergarten experiences, this stage encompasses what is generally considered "reading readiness." Phonemic awareness, which is defined as understanding that words are composed of individual sounds, as well as letter awareness are primary skills gained during this period (Chall, 1996). These prerequisites have been highlighted because correlational research suggests they are the two best predictors of children's reading skill acquisition during the first two years of instruction (NICHD, 2000). It should be noted that there is some debate about the term 'phonemic awareness' being applied to this age group because 'awareness' implies the ability to identify and manipulate speech sounds; therefore, some researchers believe the term 'phonemic sensitivity' describes more

general speech processing abilities, thus is a more appropriate term for this age group (Lonigan et al., 1998).

Stage 1. After the aforementioned fundamental reading abilities have been acquired, five stages of reading development continue through the elementary and high school years culminating in a stage some individuals experience in college or adulthood while others fail to attain it (Chall, 1996). Stage 1 spans first and second grades and is the period in which phonological recoding skills develop. Specifically, letters begin to be perceived as sounds that can be blended to form words allowing a child to “sound out” an unknown word (Chall, 1996). Overall, Chall’s prereading stage is comprised of initial acquisition of phonemic awareness and introductory phonics skills, which continue to develop, becoming more advanced in Chall’s initial reading stage (i.e., stage 1).

Stage 2. In Stage 2, spanning from second to third grade, the child’s reading fluency develops (Chall, 1996). At this point in typical reading development, the child becomes able to read simple material fluently. Fluency, defined as the ability to recognize words easily, increases the speed and accuracy with which one reads and facilitates understanding (NICHD, 2000). As a child continues to develop his or her reading skills, experiencing guided oral reading was determined to promote reading fluency. This technique is comprised of two components: practice via reading aloud and feedback provided from a more skilled reader (NICHD, 2000).

Stage 3. Reading comprehension develops during Stage 3, which spans from fourth to eighth grade (Chall, 1996). Comprehension skills allow children to extract new information and meaning from what they read (Chall, 1996). Around this time the shift from ‘learning to read’ to ‘reading to learn’ occurs. That is, learning to read is no longer

the focus of instruction but rather a process through which new information is gained, thus some mastery is required in order to keep pace with and benefit from this instructional shift. As a child advances in his or her developmental sequence, teaching vocabulary words and reading comprehension strategies were noted methods for increasing reading ability and improving textual understanding (NICHD, 2000).

Stages 4 and 5. In Stage 4, spanning eighth through twelfth grade, children develop the ability to comprehend information presented from multiple perspectives (Chall, 1996). Lastly, Stage 5 spans from college age into adulthood and is the highest reading level, which is comprised of construction and judgment skills and may not be achieved by all individuals (Chall, 1996).

Chall's stages described above illustrate the progressive nature of reading development. Mastery of the fundamental skills learned in the early stages of reading development influences how complex skills are learned in later stages (Siegler et al., 2003). A child's mastery of pre-reading skills such as letter awareness and phonemic awareness influences how easily and effectively the child can identify a word and read a sentence, which eventually influences a child's ability to comprehend an entire passage. The adoption of this theoretical orientation has resulted in profound changes to early childhood education. In general, early childhood education policy has shifted from a laissez-faire emergent literacy approach to literacy instruction rooted in scientific research (Christie, 2008).

National Reading Panel's Core Areas of Reading Instruction to Promote Development

Reading development is a lengthy, complicated process that typically spans the duration of one's school experience (i.e., from birth to adulthood; Chall, 1996). When attention is focused exclusively on the critical formative years before a child enters elementary school, scientifically based reading research (SBRR) has become the predominant perspective governing early literacy instruction (Christie, 2008).

"Scientifically based research" is defined specifically through the No Child Left Behind Act, which specifies the use of rigorous methodology, data analysis, and a peer review system among other requirements (NCLB; 2002). Supporters of SBRR believe this line of research provides insight into the foundational skills required to become proficient readers as well as the most effective ways for teaching said skills (Christie, 2008). SBRR teaching methods remain highly debated, although proponents of SBRR insist it can be presented in an engaging format and is not solely comprised of robotic drill and practice.

As the overview provided above suggests, the specific sequence of developmental stages experienced during the formation of reading skills has not conclusively been determined to be universal and invariant in nature. However, the results of an exhaustive examination of research-based knowledge about reading and reading instruction conducted by a congressionally formed national panel of experts (i.e., the National Reading Panel) have reached consensus about the core components of effective reading instruction (NICHD, 2000). Expert review of the literature has resulted in the assertion that effective reading instruction is comprised of five core topics: phonemic awareness instruction, phonics instruction, fluency, vocabulary instruction, and text comprehension instruction. NICHD (2000) also emphasized the importance of teacher education and preparation as well as the relationship between technology and reading instruction. To

effectively explicate each of the aforementioned core topics, phonemic awareness, phonics, fluency, vocabulary, and text comprehension will be examined in turn.

Phonemic Awareness

Theoretical overview. Phonological awareness is a core early reading skill that is defined as, “an individual’s awareness of the sound structure of speech” (Christie, 2008, p. 32). Phonological awareness and phonemic awareness are not interchangeable terms; instead, phonemic awareness is a subcategory of phonological awareness (Armbruster et al., 2001). Phonological awareness is a broad term comprised of skills related to the identification and manipulation of various parts of spoken language (e.g., words, syllables, onsets, phonemes, etc.) as well as awareness of other aspects of sound (e.g., rhyming, alliteration, intonation). Conversely, the focus of phonemic awareness is narrower in scope, referring to the ability to understand spoken words are composed of individual sounds (i.e., phonemes; Christie, 2008). Finally, it is through phonics that early learners understand the relationship between phonemes and graphemes (sounds are conveyed in written language via letters) and note that this relationship is predictable (Armbruster et al., 2001).

According to NICHD (2000), instruction in phonemic awareness consists of preparing children to be able to focus on phonemes in spoken syllables and words as well as teaching children to manipulate them. Phonemes are defined as, “the smallest units composing spoken language” (NICHD, 2000, p. 7). Another potentially useful conceptualization of phoneme is an isolated sound within a syllable or word; such that, the word “cat” consists of three phonemes (Torgesen & Mathes, 2000). Although it frequently occurs, one must avoid confusing phonemic awareness with the ability to

determine whether two spoken words are the same or different, which is termed, “auditory discrimination” (NICHD, 2000). It is also important to note that phonemes differ from letters used in the spelling of words because a phoneme, or sound, can be comprised of multiple letters (i.e., the letters ‘sh’ form a single phoneme); that is, the ratio between letters to phonemes is not always 1:1 (Gillon, 2004; Torgesen & Mathes, 2000).

Research. The National Reading Panel assembled two bodies of research, correlational and experimental studies, in support of the inclusion of phonemic awareness as a topic of examination (NICHD, 2000). Correlational research has suggested school-entry levels of phonemic awareness, along with letter knowledge, are the best predictors of successfully learning to read during the first two years of instruction (Gillon, 2004; NICHD, 2000). This line of research highlights the importance of phonemic awareness within the development of reading skills. Furthermore, the effectiveness of this instructional approach has been thoroughly examined via experimental research that has prompted much interest in training programs (NICHD, 2000).

Phonemic segmentation skills and successful reading development are highly interrelated (Bentin & Leshem, 1993). Overall, the National Reading Panel report suggests phonemic awareness training was the ‘cause’ of improvements in student phonemic awareness, reading, and spelling subsequent to training (NICHD, 2000). Panelists argued these results were not explained by the Hawthorne effect because similar findings were not obtained on student math performance and that the benefits of this type of instruction persisted beyond the end of the training. Overall, results suggest children with varying levels of skill improved their phonemic awareness, thus enhanced their

reading skills, as a result of receiving explicit instruction in phonemic awareness (NICHD, 2000). The most effective programs were straightforward in nature and taught students to systematically manipulate phonemes in small groups. Results also suggest this form of instruction may benefit normally-achieving students learning to spell and improve early reading skills (Ball & Blachman, 1991; NICHD, 2000).

Phonics

Theoretical overview. The most salient feature of phonics is the correspondence between a sound and a letter; such that, phonics instruction is a method of teaching reading that is based on acquiring the connection between letters and sounds, and how this letter-sound correspondence is used in reading and spelling (NICHD, 2000). Commonly referred to as alphabetic principle, phonemic awareness instruction and phonics instruction differ (NICHD, 2000). Phonics instruction involves teaching students letter-sound relations used in reading and spelling written words and phonological awareness is necessary for understanding the printed representation of language (NICHD, 2000; Torgesen & Mathes, 2000). To further complicate matters, NICHD (2000) reported that phonemic awareness instruction can be conceptualized in terms of phonics instruction if it includes blending or segmenting word sounds using letters. The use of letters in an exercise serves as the primary determining factor as to whether it is rooted in teaching phonemic awareness or phonics because children can be taught to manipulate sounds without using letters (phonemic awareness) (NICHD, 2000). Once letters have entered the equation, one has moved into the instruction of phonics.

At its inception, phonics instruction seeks to help early readers understand the relationship between letters and phonemes to form letter-sound correspondence used in reading and writing. Two general types of phonics instruction exist: systematic, wherein a sequential series of phonics are explicitly taught to students, and incidental, which provides instruction as opportunities for it occur as opposed to following a systematic sequence of phonics elements (NICHD, 2000). Within these two disparate groups, a myriad of approaches to phonics instruction exist that vary across a host of dimensions including unit of analysis, method of representing letter-sound combinations, explicitness used in teaching phonic elements (e.g., analogy phonics, analytic phonics, embedded phonics, phonics through spelling, and synthetic phonics).

Alphabet knowledge. Alphabet knowledge is comprised of alphabetic identification (e.g., ability to point to a letter appearing on alphabet chart correctly when prompted) as well as alphabetic naming (e.g., producing letter name when prompted by visual cue; Christie, 2008). Alphabet knowledge and print awareness are complementary core early reading skills, in that understanding of alphabetic principles involves printed material, which coincides with one's ability to become aware of printed text. For example, providing an auditory response to a printed letter prompt or pointing to a printed letter after being given an auditory prompt involves alphabet knowledge and print awareness.

Print awareness. Print awareness refers to the ability to recognize print in both contextualized and decontextualized settings (Christie, 2008). That is, children who possess this skill are able to recognize print within a familiar context (e.g., label on a familiar box) as well as in the form of written words without a familiar context (e.g.,

plain text in a book). Print concepts refers to an awareness of how print is used and applied across settings as opposed to concrete skills such as letter knowledge (Snow et al., 1998). Book concepts such as front and back cover orientation as well as conventions of print including directionality, punctuation, and capitalization are also subsumed within this skill (Christie, 2008).

Research. General results of the meta-analytic review undertaken by the National Reading Panel suggest systematic phonics instruction enhances children’s success in learning to read and is significantly more effective than teaching methods consisting of little or no phonics instruction (NICHD, 2000). Specifically, benefits were suggested for students in grades kindergarten through sixth, including children who struggled with learning to read, a majority of whom were particularly well-supported by systematic synthetic phonics instruction (i.e., phonics “direct instruction”). These struggling readers were found to consistently demonstrate substantial gains in their ability to read words and also made modest gains in their ability to process text.

With respect to the age group of interest at present, early readers in kindergarten were found to demonstrate enhanced ability to read and spell words as a result of systematic beginning phonics instruction, which can be provided in an entertaining and creative manner (NICHD, 2000). Therefore, despite conventional assumptions about such practices being developmentally-inappropriate, results obtained from many research studies suggest early readers in kindergarten and first grade significantly benefit from systematic phonics instruction. Equally pertinent, results from this analysis suggest systematic synthetic phonics instruction was significantly more beneficial for readers

with low-SES than approaches that focused less on initial reading skills, as evidenced by improvements in alphabetic knowledge and word reading skills (NICHD, 2000).

Overall, results suggest systematic phonics instruction has the potential to serve a crucial role in the successful development of adequate reading for many students across age, ability, and SES background, including those who may be at risk for unsuccessful reading development. Furthermore, members of the National Reading Panel emphasize that systematic phonics instruction is necessary but not sufficient, in that it is only one component of a total reading program (NICHD, 2000). To attain a successful reading outcome, phonics skills must be integrated with adequate phonemic awareness, fluency, and text reading comprehension skills (Joseph, 2006; Torgesen & Mathes, 2000).

Fluency

As one of the critical factors contributing to successful reading comprehension, fluency is a skill acquired during the higher stages of reading development (Chall, 1996). Fluent readers have the ability to read orally with speed, accuracy, and proper expression (NICHD, 2000). Although it is one of the five core components of skilled reading, the National Reading Panel reports it is frequently overlooked within the classroom, which is regrettable because poor fluency primes readers for problems remembering content and linking it to previously acquired information. Reading practice, typically through guided repeated oral reading or independent silent reading, is widely considered an important contributor to fluency (NICHD, 2000).

A detailed analysis on the available research conducted on reading fluency revealed that guided oral reading procedures drawing upon teacher, peer, or parental guidance had a significant positive impact on word recognition, fluency, and

comprehension across several grade and student ability levels. Correlational research examining the influence of independent silent reading suggests higher rates of reading are matched with higher levels of fluency, vocabulary, and comprehension; however, causation cannot be drawn from correlational research, which limits the usefulness and applicability of these findings. Furthermore, programs fostering independent reading by providing ample time to read independently and encouraging students to do so failed to reliably increase amount of student time actually spent reading or that said increased reading would improve reading skills, however more research within this topic of interest is needed before staunch conclusions can be drawn (NICHD, 2000).

Vocabulary

Theoretical overview. According to the results of the National Reading Panel, the critical role played by vocabulary in the development of reading skills is well established (NICHD, 2000). Vocabulary has been defined as a child's ability to understand the meanings of words, which contributes to oral language development as well as the development of early literacy skills (Christie, 2008). Vocabulary can be classified into one of two types: oral and print. Oral vocabulary refers to possessing understanding of a word once spoken, even if it cannot be understood in print until it is decoded to speech; conversely, print vocabulary refers to printed words about which one possesses understanding. As a result of the relationship between these two types of vocabulary, "the larger the reader's vocabulary (either oral or print), the easier it is to make sense of the text" (NICHD, 2000, p. 13).

Oral vocabulary specifically refers to one's understanding of words used when speaking or listening to others, compared to reading vocabulary, which is comprised of

one's ability to recognize or use printed words (Armbruster, Lehr, & Osborn, 2001). Adequate vocabulary skills are a necessary prerequisite for being able to communicate effectively and oral vocabulary serves as a foundation for making sense of printed words while establishing a printed vocabulary (Armbruster et al., 2001). This sequence is consistent with the possible explanation for the link between vocabulary size and early reading ability put forth by Snow and colleagues (1998). Specifically, the researchers suggest "within-word discrimination ability" or adequate phonemic awareness and representation skills may be dependent upon one's vocabulary size as opposed to other variables such as developmental level or chronological age; consequently, inadequate phonological skill stemming from small vocabulary limits future development of phonemic awareness skills (Snow et al., 1998, p. 47).

Research. Researchers attempted to examine instructional properties of vocabulary, but were limited by the small number of studies in vocabulary instruction that met the stringent methodological criteria for inclusion in a meta-analysis conducted on the topic (NICHD, 2000). Although a formal meta-analytic review was not possible, studies that were reviewed suggested the importance of vocabulary instruction. For example, the use of age- and ability-appropriate vocabulary instruction methods resulted in gains in reading comprehension. Comparisons of computer-based versus traditional methods of vocabulary instruction also suggested that computers were more effective in some studies (NICHD, 2000). In addition to specific, direct vocabulary instruction, vocabulary can be learned incidentally through storybook reading or via listening to others. Vocabulary development can be fostered by helping students learn words before reading a text and through task restructuring and multiple exposures across contexts.

NICHHD (2000) reported that low-achieving students particularly benefited from the substitution of easy words for more difficult ones.

Overall, research findings on vocabulary suggest it should be taught directly as well as indirectly through repetition and multiple exposures within a rich context. Incidental learning and use of computer technology should also be explored, as should direct instruction utilizing task restructuring to promote active engagement on the part of the student. Lastly, panelists assert, “dependence on a single vocabulary instruction method will not result in optimal learning” (NICHHD, 2000, p. 14).

Text Comprehension

As the last and arguably most advanced reading skill to be discussed, comprehension is a process wherein readers actively derive meaning from a text by drawing from deliberate problem solving thought processes (NICHHD, 2000). Actively relating ideas represented in print to information they have previously obtained (i.e., knowledge stemming from personal experiences) to create a mental representation stored in one’s memory has been found to enhance comprehension. Although readers informally develop techniques for linking information within text to individual knowledge and personal experience, explicitly teaching strategies to assist students with this process can foster increased comprehension, which subsequently enhances personal understanding. Preferably, a multiple-strategy method of text-comprehension instruction would be used, which may draw upon the following types of instruction: comprehension monitoring, cooperative learning, use of graphic and semantic organizers, question answering, question generation, story structure, and summarization (NICHHD, 2000). However, results of a meta-analysis conducted by Swanson (1999) suggest a combined instructional

model including strategy instruction (as referred to above) as well as direct instruction positively influence text comprehension. In addition, direct instruction has been linked to improved word recognition. Therefore, the implementation of a well-rounded combined instructional model is likely ideal, as supported by the research findings that continue to suggest reading is a complicated process requiring multiple sources of co-occurring support.

In summary, early reading development contributes to the success of later reading development; consequently, early setbacks may present challenges that impede growth substantially. Adoption of this theoretical paradigm, rooted in successive skill-building, has resulted in substantial change to the conceptualization of reading development (Christie, 2008). For example, Snow, Burns, and Griffen (1998) emphasize the importance of entering kindergarten with adequate early reading skills as method for preventing future reading problems, asserting, “Although not a panacea, this would serve to reduce considerably the magnitude of the problem currently facing schools” (p. 5). This sentiment has also had a profound impact on early reading instruction policy (Christie, 2008). For example, pre-kindergarten standards in academic domains including language and literacy are currently being developed under the direction of several recent federal projects (Neuman & Roskos, 2005).

Despite the aforementioned changes, successful reading development may not be solely a matter of exposure to best-practice instructional strategies. Development does not occur in a vacuum; therefore, additional factors that contribute to successful versus unsuccessful reading development must be considered.

The Bioecological Model and Reading Development

At each stage of this developmental process, a multitude of potentially influential factors can positively or negatively impact reading development. When detrimental factors exceed beneficial ones within a specific environment, unsuccessful reading development becomes more likely, which has the potential to reach societal-level problem status. Urie Bronfenbrenner's bioecological model provides a useful framework for analyzing major social problems like unsuccessful reading development and examining the range of factors that may influence this problem (Bronfenbrenner, 2000). A main focus of bioecological theory is the role of environmental factors on human development (Siegler et al., 2003). Human development, including the development of reading skills, is influenced by a wide variety of factors. As will be explained in the following paragraphs, a child's family, school district, neighborhood, parent's place of employment, culture and social class, along with countless other variables, are all potentially influential factors.

Bronfenbrenner organized influential factors by grouping them into environmental systems, with each system varying in the directness of its potential influence (Siegler et al., 2003). Systems include the microsystem, mesosystem, exosystem, and macrosystem, which are arranged as a series of concentric circles with the developing child at the shared center. Influential factors most immediate to the developing child (e.g., settings containing the child or relationships in which the child is involved) fall within the microsystem level. Conversely, as defined by Bronfenbrenner (1979), the exosystem consists of, "one or more settings that do not involve the developing person as an active participant but in which events occur that affect, or are affected by, what happens in that setting" (p. 237). Influences residing within this system

are less directly involved in the child's development, such as parental employment, but still maintain influential ability.

The microsystem and exosystem are separated by the mesosystem, which includes the relations between microsystem-level factors and exosystem-level factors.

Specifically, the mesosystem is, "a set of interrelations between two or more settings in which the developing person becomes an active participant" (Bronfenbrenner, 1979, p. 209). Within this system of the model, the influence of interconnections can be examined.

For example, inter-setting connections between home and school are likely to substantially impact child and adolescent development (Bronfenbrenner, 1979). In the case of reading development discussed at present, supportive inter-setting connections can greatly influence the entire developmental process. Christenson (2004) has discussed the importance of the family-school mesosystem, asserting, "Capturing the degree to which children's family and school contexts are learning environments, and complementary (not symmetrical) roles are created, represents a much needed, new perspective for advancing educational outcomes for students" (p. 87). That is, successful student outcomes can be supported by ensuring teachers and parents adopt a shared goal, though their respective roles may differ (e.g., formal instruction from teachers versus fostered learning and the value of education from home-based caregivers).

Given the importance of mesosystem-level interrelations as discussed above, it is critical to examine the influence of early reading experiences within the home in addition to examining instruction provided within the school to fully understand the reading development process. Parental reading support at home is crucial to successful reading development because critical reading skills are developed within the first three years of a

child's life, a period of time typically spent with primary caregivers in the home (Lonigan et al. 1998). Bronfenbrenner (2000) stressed the importance of reciprocal interaction between the developing child and persons, objects, and symbols in that child's immediate environment, which he labeled 'proximal processes.' Bronfenbrenner (2000) asserted proximal processes are, "the primary engines of development," and the developmental impact of these processes increase when they occur between individuals with a strong emotional attachment (p. 130). A parent interacting with his or her child in the home through language-based activities is an example of a proximal process, which makes parental support at home a "primary engine" for reading development.

Pervasive factors such as the ideologies and customs of a culture or social class fall within the macrosystem-level of the bioecological model. As defined by Bronfenbrenner (1979), the macrosystem, "refers to the consistency observed within a given culture or subculture in the form and content of its constituent micro-, meso-, and exosystems, as well as any belief systems or ideology underlying such consistencies" (p. 258). The 'culture of poverty' and other broad-reaching effects of developing within a low-socioeconomic status environment would be classified as a macrosystem factor. Essentially, all other developmental systems are embedded within this comprehensive level. Lastly, the chronosystem is comprised of developmental changes occurring over time (Siegler et al., 2003). This system can provide a historical perspective of reading development, reviewing the advancements and declines that have occurred over time.

The significance of Bronfenbrenner's bioecological model for the present discussion stems from the model's ability to address multiple factors that directly and indirectly influence a developmental process simultaneously. As a macrosystem-level

factor, low-SES indirectly influences a child's reading development by having a direct negative impact on exosystem, mesosystem, and microsystem factors. For example, low-SES (macrosystem) results in insufficient income at the parent's place of employment (exosystem), which can lead to marital discord and subsequent lack of family reading support at home (microsystem). Furthermore, a low-SES parent may be forced to work multiple minimum-wage jobs as a result of inadequate employment skills or have multiple children to rear without the support of a partner. Stressors stemming from inadequate financial resources may prevent a parent from becoming involved with the child's education, thus eliminating parental support at school (mesosystem), because the stressors necessitate need-prioritizing, with energy being expended on meeting the needs that are most immediate and essential.

A useful model for conceptualizing the hierarchical organization of needs was developed by Maslow, which consists of five different sets of needs (hierarchically arranged) beginning with physiological needs, then safety needs, love and belongingness needs, esteem needs, and concluding with the need for self-actualization (Maslow as cited in Ormrod, 2004). Using this model for the present discussion, low-SES families may need to focus all of their available emotional, cognitive, and financial resources on ensuring that their children meet basic developmental needs and have few, if any, resources available to pursue higher-order needs. This is illustrated in the example discussed above: the physiological needs and the need for safety might take precedence over higher-order needs related to intellectual development (i.e., reading). Although causative relationships cannot be drawn, low-SES may deprive developing readers of multiple sources of parental support, an absence of which may be linked to inhibited

reading development (Dearing, McCartney, Weiss, Kreider, & Simpkins, 2004; Dodici, Draper, & Peterson, 2003; Miedel & Reynolds, 1999; Primavera, 2000; Rush, 1999).

Christenson (2004) conceptualized barriers for families, educators, and the family-school relationship in terms of limitations within structural or psychological domains. This creates the potential for six sources of obstruction (i.e., family structural, educator structural, family-school structural, family-psychological, educator-psychological, family-school psychological). The abovementioned examples of barriers that may be experienced by families with low-SES fall within the structural domain. Therefore, low-SES may experience barriers that limit family-school mesosystemic support in addition to the structural and psychological barriers experienced by educators and those that jeopardize the relationship itself (Christenson, 2004). This pervasive conceptualization of barriers along with the researcher's assertion that family-school partnerships provide an opportunity to promote successful learning in all students provides support for the argument that empirically based mesosystemic family-school interventions are a necessary component of successful reading development within at-risk populations.

Reading Development within a Low-SES Environment: Definition of Risk

Despite being unable to come to a consensus about the best way to measure SES and assess its influence on specific developmental processes, researchers are in agreement about how SES can be defined as well as the general nature of the relationship between SES and development (Bradley & Corwyn, 2002). It is generally agreed that occupation, income, and education, taken collectively, provide the most comprehensive definition of SES (Bradley & Corwyn, 2002). There is also agreement about the negative

impact of low-SES on children's development. Specifically, previously conducted research suggests low-SES is a significant risk factor for unsuccessful reading development (Hecht, Burgess, Torgesen, Wagner, & Rashotte, 2000; Lonigan et al., 1998). Although a general relationship between low-SES and reading development has been suggested, the specifics of this relationship have not been established. Additional research examining the role of low-SES in reading development is necessary to address the deficiencies in this area of research.

The latest available statistical information suggests the risk of experiencing low-SES during childhood remains prevalent within American society. The U.S. Census Bureau's 2010 Community Survey was conducted nationwide, with the intention of providing current information about how communities are changing. Per this report, the poverty rate of children (individuals under the age of 18) reached 21.6% with a margin of error of +/- 0.2% (U.S. Census Bureau, 2010). The U.S. Census also reported that the 2011 poverty rate for children was 21.9%, which was not statistically different from 2010 estimates. Previously, the poverty rate for children in 2004 was 17.8%, which equated to 13 million children living in poverty (DeNavas-Walt, Proctor, & Lee, 2005).

Consistent with current census data, the 2004 poverty rates for adults aged 18-64 and those 65 or older remained lower than the poverty rate for children (DeNavas-Walt et al., 2005). In addition, children represented 35.2% of the population in poverty but only represent 25.2% of the total population (DeNavas-Walt et al., 2005). Not only are more children living in poverty than in years past, children represent a significantly larger percentage of impoverished individuals compared to their percent of the total population. The most startling data is drawn from children younger than 6 living in female-headed

households with no male present, 52.6% of whom live in poverty (DeNavas-Walt et al., 2005). The rates of children in low-SES environments coupled with the established detrimental effects of poverty on reading development make research investigating this relationship highly important.

Review of Literature Findings

As discussed above, reading development occurs over a series of successive stages (Chall, 1996), with each stage being susceptible to a range of maladaptive and protective factors. Potential sources of influence can range from factors inherent to the child at the microsystem level to broad, societal-level macrosystem factors (Bronfenbrenner, 1979). To adequately understand the role of these factors on the complex reading development process, research spanning the process must be examined. The importance of early literacy skills or reading readiness ability has been suggested by the prominent theoretical paradigm founded on the belief that successful reading is a process of successive skill-building (e.g., Chall, 1996). Therefore, research examining early reading skills and how the successful or unsuccessful attainment of these skills impacts the reading development of children with low-SES is of specific importance to the discussion at present.

Association between preschool reading development and socioeconomic status. The construction of foundational reading skills, Chall's Stage 0, begins before the onset of preschool (Chall, 1996). During this stage of reading development, the parent-child interactions occurring within the child's microsystem and the parent-preschool caregiver interactions occurring in the mesosystem are the driving force behind reading skill acquisition. To address a dearth of phonological processing research in preschool

populations, Lonigan et al. (1998) examined phonological sensitivity across different levels of linguistic complexity in two groups of children: those with middle- to upper-income families and those with lower-income families. Working with this population allowed researchers to examine the effects of SES differences on a variety of phonological sensitivity measures.

Results suggested that phonological sensitivity increased with age and also stabilized. Increases occurred across both groups; however, significant differences in the amount of phonological sensitivity growth were found between SES groups. Children with low-SES demonstrated lower phonological sensitivity than children from middle-SES backgrounds on measures of rhyme and alliteration oddity detection by five years of age and on blending and elision tasks by four years of age (Lonigan et al., 1998). This finding supports Bronfenbrenner's assertion regarding the interaction of systems: the effects of SES, a macrosystem factor, are trickling down through the exo- and meso-systems to impact a microsystem-factor: early academic performance (i.e., child's performance on measures of phonological sensitivity).

When all phonological sensitivity tasks were assessed, SES differences emerged as early as three years of age when oral language ability was controlled. Although floor effects limited the measures used to assess phonological sensitivity, this study importantly suggests that a SES-based division in reading ability is present at an earlier age than most researchers had originally theorized. Significant SES differences in reading development are present at the preschool level. In addition, phonological sensitivity was also predictive of word reading ability at older ages when language skills and letter knowledge were controlled (Lonigan et al. 1998). Therefore, being at risk for inadequate

phonological sensitivity, children with low-SES begin the entire reading development process from a disadvantaged position. Intervention at the microsystem and mesosystem levels is needed in order to foster reading skill development.

Association between elementary school reading development and socioeconomic status. Whereas Lonigan et al. (1998) expanded low-SES reading development research by examining early skill development in young, preschool-age children, Hecht et al. (2000) examined early skill development in older, grade school-age children. Traditional research conducted within this area focuses on the initial emergence of potentially mediating factors; therefore, it does not extend past second grade. Extending the age under investigation is important for establishing the type of long-range effects of failing to develop adequate early reading skills. By assessing children who are developing within dissimilar macrosystems (i.e., different economic classes) the effects of this overarching developmental system on individual performance at the microsystem level (e.g., children's reading performance in the school environment) can be explored.

Hecht et al. (2000) examined social class differences in the development of decoding and reading comprehension skills. The primary skills under investigation in this study were phonological awareness, rate of access to phonological information in long-term memory, and print knowledge. Researchers were interested in exploring how these skills mediate SES differences in reading skill development. Phonological awareness (PA) consists of the ability to identify phonemes, the specific sounds in words, as well as the ability to blend separate phonemes together in order to make words. Rate of access to phonological information in long-term memory (ROA) refers to the ability to recall coded language information from long-term memory. Adequate access to this information

stored in long-term memory influences a child's ability to use phonological information effectively when reading (Hecht et al. 2000). Lastly, print knowledge (PK) consists of one's general understanding of how printed language is structured.

Results suggested PK, PA, and ROA levels measured in kindergarten were significantly related to reading skill development when the effects of general verbal ability and preexisting decoding skills were controlled. When examining whether any of these factors mediate SES differences in reading development, researchers determined PK, PA, and ROA had a large mediating effect but could not completely account for SES differences. Understanding that early PK, PA, and ROA reading related skills partially influence the SES-reading development relationship makes progress toward fully understanding this complex relationship between macrosystem and microsystem level factors. This study provides insight into the long-range effects of early reading skill development and how these factors potentially mediate SES differences in reading comprehension later in life.

Research conducted by Lonigan and colleagues (1998) as well as Hecht and colleagues (2000) suggests children with low-SES families are at risk for developing inadequate early reading skills. Well-documented differences in reading development exist between children with low-SES and children with middle- or high-SES (Rush, 1999). Overall, children with low-SES demonstrate sub-average levels of reading development (Rush, 1999). One possible explanation for this relationship is that children with low-SES lack a solid foundation of pre-reading abilities and reading-related skills. Essentially, failure to develop early reading skills negatively influences the entire reading

development process and makes successful reading development a very arduous and challenging process.

In summary, previous research suggests children in low-SES environments are at significantly higher risk for poor reading development compared to children in middle- or high-SES environments. Using bioecological theory as a framework, SES is a macrosystem-level factor that indirectly influences all aspects of a child's development, including the process of developing reading skills and abilities. This complex system of interrelated factors makes identifying the specific factors through which SES influences reading development difficult, if not impossible. Bradley and Corwyn (2002) explained that a poor developmental outcome could be directly linked to SES, an SES cofactor (i.e. co-occurring macrosystem level factor such as minority culture status), or a combination of these influences. The researchers also described the "classic 'third variable' problem" in which a third variable interconnected with SES can potentially influence development (Bradley & Corwyn, 2002). Parent or primary caregiver support, referred to as 'parental support' throughout present article for purposes of brevity, is a highly influential 'third variable' within the SES-reading development relationship that warrants further investigation. In order to fully address the relationship between parental support and reading development within low-SES populations, parental support in school and home contexts must be examined.

School-Based Parental Support and Reading Development

Parental reading support through school or early learning center involvement is crucial to successful reading development. The manner in which government officials are addressing the problem of poor reading development in low-SES populations supports

this assertion. Parent involvement has been made a major factor in attempts to remedy SES gaps in academic achievement. The eighth U.S. Education goal of the Goals 2000 program developed by the U.S. Department of Education reads: “every school will promote partnerships that will increase parental involvement and participation in promoting the social, emotional, and academic growth of children” (as cited in Miedel & Reynolds, 2000). This goal suggests that the government has prioritized parent involvement in schools and considers it an important way to support reading development.

Parental involvement has been identified as a primary factor in supporting low-SES reading development, and research has suggested it plays an important role in successfully developing adequate reading skills (Shaver & Walls, 1998; Raffaele & Knoff, 1999). Miedel and Reynolds (1999) explored the relationship between parental involvement in early intervention programs and the academic achievement of a group of children who are disadvantaged. The specific purpose of the study was to examine the relationship between types of parental activities and frequency of parental involvement early in a child’s education and his or her reading achievement and grade retention or special education placement experienced further along in the child’s education. Results suggested the frequency of parental involvement in children’s preschool/kindergarten years as well as the number of activities in which parents participated was significantly positively related to children’s reading achievement, lower rates of grade retention, and fewer special education placements (Miedel & Reynolds, 1999). The researcher’s use of retrospective accounts from parents (i.e. parents of high school students were asked to remember their level of involvement in their children’s preschool, early intervention

program, kindergarten, etc.) limited the reliability of these results; however, parental involvement should not be dismissed as an unreliable way to foster successful reading development in low-SES students (Miedel & Reynolds, 1999).

The relationship between family involvement in children's education and children's reading development in populations of individuals with low-SES was also examined by Dearing et al. (2004). Researchers investigated the impact of maternal education and children's feelings about literacy on the relationship between family educational involvement (FEI) and literacy achievement. Results suggested FEI positively influences children's feelings about achievement, making it very beneficial to children at-risk for low-achievement. In addition, FEI in low-SES populations was found most important for children with the least-educated mothers (Dearing et al., 2004). Children's feelings about literacy were more positive with involved mothers than less-involved mothers, including less-involved but higher-educated mothers. At fifth grade, higher FEI was significantly associated with higher literacy performance, especially for the lower maternal education group. There was no performance gap between low and high maternal education groups when all mothers were highly involved; therefore, programs with high levels of involvement effectively eliminate the potential problem of low maternal education (Dearing et al., 2004). Children's feelings about literacy mediated the relationship between FEI and literacy performance and must be included when considering the benefits of parental involvement.

The study conducted by Drummond and Stipek (2004) effectively links home-based support with school involvement because specific techniques and activities to support reading development within the home (e.g. commenting during shared reading)

are learned through involvement with the child's teacher and school. Essentially, the parent with low-SES is able to provide home-based reading support most effectively after becoming involved with his or her child's school (Drummond & Stipek, 2004).

Sonnenschein and colleagues (1997) also addressed the need for home-school collaboration. The researchers specifically stressed the need for congruence between the type of support offered at home and the type of skills or abilities stressed within the classroom. If parents are not involved with their children's schools, they are unable to determine if the types of reading support they offer within the home are truly beneficial for the child in the school (Sonnenschein et al., 1997). Essentially, the parent must be involved in reading development at home, through literacy-based interaction and shared reading; however, he or she must also attend meetings, assemblies, and know what is happening at school in order to foster the development of reading skills most successfully (Shaver & Walls, 1998).

Home-Based Parental Support and Reading Development

Not only is support through involvement with the child's school or early learning center highly important for successful reading development, parental support within the home is critical for children to develop adequate reading skills and abilities. Parental reading support within the home is crucial to successful reading development because critical reading skills are developed within the first three years of a child's life, a period of time typically spent with primary caregivers in the home (Lonigan et al. 1998).

Bronfenbrenner (2000) stressed the importance of reciprocal interaction between the developing child and persons, objects, and symbols in that child's immediate environment, which he labeled "proximal processes" (p. 130). Bronfenbrenner (2000)

asserted proximal processes are, “the primary engines of development,” and the developmental impact of these processes increase when they occur between individuals with a strong emotional attachment (p. 130). A parent interacting with his or her child in the home through language-based activities is an example of a proximal process, which makes parental support at home a “primary engine” for reading development. In addition, parents’ level of education can potentially influence their beliefs about reading development, which can influence the approaches used to support this developmental process (Lynch, Anderson, Anderson, & Shapiro, 2006).

The types of support a parent provides within the home is also dependent upon the parent’s beliefs about his or her role in the child’s learning process; therefore, the role parents with low-SES believe they play in their children’s learning must be examined before parent-child interaction, parent-child language activities, and other specific types of home-based parental support can be investigated. Some researchers suggest a majority of parents feel they have a responsibility to contribute to their children’s reading skill development and can influence their school success (Evans, Fox, Cremaso, & McKinnon, 2004). Researchers have also found that maternal beliefs are substantially related to mother and child behavior during shared book reading; such that, mothers’ beliefs about the purpose (goals) of reading as well as their expectations for their children’s future reading achievement is related to how she and her child behave in this context (bidirectional relationships may be present and causation cannot be determined at present; Meagher, Arnold, Doctoroff, & Baker, 2008).

Although the specific causal relationships between parental beliefs and behavior during shared reading cannot be established at this time, the related beliefs of individuals

economically at risk have been well researched. Drummond and Stipek (2004) questioned whether parents with low-SES who had second and third graders believed it was important to help their children with academic work, including reading, and whether they were aware of what their children were learning in school. The researchers sought to uncover parents' beliefs about their role in the learning process. Results suggested a majority of parents "strongly value" involvement in their children's learning. Specifically, questions regarding, "reading, math, helping with homework, and knowing what their child was learning" were all close to the highest score on a four-point scale, "definitely should." Overall, results suggest parents with low-SES "strongly" believe they should help their children's school success and be involved in the learning process (Drummond & Stipek, 2004).

This study challenged the assumption that many parents with low-SES do not believe involvement with their children's education is important (Drummond & Stipek 2004). Parents with low-SES valued their children's education and wanted to support their children's academic success. Therefore, the desire to become involved was present but their actual involvement was still unsatisfactory. This finding suggests teachers may want to facilitate parental involvement and offer suggestions to parents about how they can help their children at home. Additionally, future research may be needed to further explore this complicated topic and better understanding why many parents with low-SES demonstrate inadequate involvement in their children's education. Additional research is also needed to develop interventions aimed at increasing parents' involvement with their children's school that can be implemented in low-SES school contexts, perhaps by eliminating obstacles that prevent the ability to become adequately involved.

Parent-Child interaction and reading development. As the preceding section suggests, parental support is essential for successful reading development, especially in low-SES environments in which the risk for poor reading development is elevated. A general form of parental support that can be provided within the home is parent-child interaction. The exploratory nature of the study conducted by Rush (1999) provides an excellent starting point in this area of parental support. Rush (1999) explored the relationship between caregiver-child interactions in the home environment and the development of children's early literacy skills and vocabulary. The specific purpose of this study was to investigate early literacy skill development in children with low-income families and examine the particular types of caregiver-child interaction that were associated with successful reading development.

After a range of early literacy skill levels and vocabulary abilities were obtained from this sample, Rush concluded the variation could be linked to the children's home environments and the child-caregiver interactions that occurred within the home. Rush (1999) asserted that the amount of structure and caregiver involvement in the interaction influences how beneficial it is for early literacy skill development. Structured activities in which the caregiver is directly involved are highly beneficial for early reading development. Specifically, structured interaction such as sharing a child-directed activity occurred when the parent "followed the child's lead" and resulted in higher levels of caregiver-child interaction. This type of interaction was associated with higher scores on measures of early literacy and vocabulary. Unfortunately, many of the parents with low-SES did not frequently engage their children in structured play. In addition, "caregiver language variables" (e.g. using positive feedback, asking questions, verbal requests etc.)

correlated with the development of early reading skills. Overall, language-based caregiver-child interaction (i.e. literacy-related activities) had the strongest association with literacy skills development. One-on-one parent-child conversations had the strongest correlation with reading skill development when compared to other types of language-based interaction.

Dodici et al. (2003) extended the research conducted by Rush (1999) through an examination of the relationship between parent-child interactions and early literacy development in young children with low-SES, beginning at 14 months of age. Results suggested parent-infant/toddler interactions were related to the following dependent measures of early literacy skills: receptive vocabulary, symbolic representation, and phonemic analysis. Thus, the relationship between early parent-child interaction and subsequent literacy skills development was supported. The results further support the connection between early parent-child interaction and literacy skill development and go beyond previously conducted research by illustrating the importance of this relationship within the first three years of a child's life (Dodici et al., 2003).

In addition, Dodici et al. (2003) asserted that in-home observation of parent-child interactions is a better predictor of early reading skill development than parent report of literacy experiences provided in the home. Rush (1999) measured parent-child interaction through in-home observation using the Code for Interactive Recording of Caregiving and Learning Environments-2 (CIRCLE-2), and also used parental report on the Stony Brook Family Reading Survey (SFRS). Dodici and colleagues (2003) used the Parent-Infant/Toddler Interaction Coding System (PICS), comparable to the CIRCLE-2, to record in-home observations, in addition to the SFRS.

The overall score on the PICS was more strongly related to the development of early literacy skills than the SFRS scores (Dodici et al., 2003). This finding suggests PICS may be a more useful measure for early literacy skills than a parental report of early literacy environments (Dodici et al., 2003). More importantly, this finding supports the need to assess the *quality* of the parent-child interaction in addition to the presence or absence of literacy activities in the home environment. Ascertaining family literacy experiences via parental response to questions relating to reading interests and habits (i.e., SFRS) may be useful but is likely not sufficient. In summary, the aforementioned studies provide a strong connection between caregiver behavior and caregiver-child interaction and the development of early literacy skills. These findings suggest supportive caregiver-child interaction at home can improve the reading development of children with low-SES.

Parent-Child shared reading and reading development. Although the studies discussed above have focused on broad types of parent-child interaction, research specifically examining shared reading is plentiful, suggesting this type of home-based parental support may be important to reading development. Primavera (2000) explored the potential benefits of low-income parents engaging in literacy activities with their pre-school age children. The researcher examined the role of parental involvement in the development of children's school readiness and emergent literacy skills within a population of low-income families.

To foster this involvement, parents attended a family literacy workshop. Primavera (2000) measured the impact of this workshop through parent interviews and teacher assessments to determine if the children and parents benefited. The eight-week

intervention program implemented is not portrayed as a quick way to address the detrimental effects of developing within a low-SES environment; instead, Primavera (2000) stressed that parents are the key to bringing about positive change. The intervention program allowed this change to happen. Results supported the hypothesis that parental involvement in home-based literacy activities benefited the reading development of children with low-SES.

Increased levels of school readiness skills were found in children whose parents participated in the workshop, as measured by parent and classroom teacher report on a 4-point Likert rating scale assessing language skills. Specifically, 47% of parents and 30% of teachers rated children's language skills "significantly improved," 43% of parents and 42% of teachers reported skills "moderately improved" and 10% of parents, 28% of teachers rated language skills "a little improved." Specific improvements reported by these two groups include increased vocabulary, improved idea expression, more understandable speech/pronunciation, as well as an increased interest in learning, especially in learning how to read and write (Primavera, 2000). Parents and other family members also reported experiencing substantial benefits from this program causing positive changes to occur at the family-system level. Overall, the study highlights the crucial role of the parent in combating the illiteracy cycle within low-SES populations.

In addition to economic risk, children with additional risk factors including prenatal exposure to cocaine and insecure attachment with caregivers have been found to benefit from supportive home-based caregiver-child interactions (Fletcher, Cross, Tanney, Schneider, & Finch, 2008). Specifically, researchers focused on examining the relationship between caregivers' reading strategies and high-risk 24-month-old

children's language development and attention levels using path model analysis. Results of path models suggested caregivers' use of expansions and questions during parent-child reading was related to children's expressive language at 30 months and caregivers' use of labeling, expansion, and questions was related to children's attention during reading (i.e., at the time of intervention, 24 months of age). However, this finding must be unpacked further to understand the relation between caregiver reading strategies and toddlers' language and attention.

Children's levels of expressive language at 24 months of age was related to frequency of reading in the home, but the only caregiver variable related to reading frequency was use of questions. That is, although children's expressive language was related to how frequently caregivers read in the home, it was not related to their level of attention during caregiver-child reading interactions. Fletcher et al. (2008) explained that children with more advanced language skills might initiate more caregiver-child reading opportunities than their less-developed peers, but only caregiver variables (reading techniques, e.g., labeling) have a substantial influence on children's attention during reading, further supporting the need to provide adequate training to parents to ensure mastery of productive caregiver-child reading strategies.

Hockenberger, Goldstein, and Haas (1999) extended previous research on parental interaction and reading development in populations of individuals with low-SES by examining joint book reading between parent and child. It was hypothesized that children from low-SES backgrounds, with and without developmental disabilities, would especially benefit from this source of parental support. A small group of participating parents (i.e., seven mothers) attended short training sessions focusing on skills children

learn before attending school and how to effectively use commenting behavior while reading together. Specific commenting relates the material being read to the child's personal life and interests and also involves scaffolding (i.e., prompting children to use increasingly complex language then fading prompts as children gain mastery of this language).

After parents were trained, the dynamics of joint book reading improved and most children increased their interactions, especially when specific commenting was used (Hockenberger et al., 1999). Specifically, the mean percentage of assertive conversational acts increased from baseline to intervention measures in five of the seven children. In general, children also became more engaged in the joint reading process as suggested by increased length of joint-book reading interaction (unrelated to book length; majority of books were 32 pages in length) and a general increase in specific comments by mothers during book reading. Hockenberger et al. (1999) suggested that these changes in interaction provided better opportunities to learn and use language, thus improving the likelihood of successful reading development.

Methodologically sound research conducted by Senechal, Pagan, Lever, and Ouellette (2008) corroborate and extend the abovementioned shared-book reading findings by examining the relationship between shared storybook reading and language outcomes and narrative ability within a group of well-educated Canadian parents and their 4-year-old children. Outcomes of this study yielded a positive relationship between frequency and variety of shared reading experiences within the home and children's expressive vocabulary, such that shared reading accounted for 10% of the unique variance in children's expressive vocabulary (Senechal et al., 2008). This finding is

consistent with previous research findings, which have suggested caregiver-child reading experiences may account for 8% of the variance in outcome measures of language growth, emergent literacy, and reading achievement (Bus, vanIjzendoorn, & Pellegrini, 1995). Researchers concluded exposure to books produced vocabulary gains because books provide a medium through which children are exposed to words they would otherwise not be in everyday parent-child conversation.

Senechal et al. (2008) were also able to extend previous findings through this line of research; specifically, researchers obtained a ‘robust and positive’ relation between shared book reading and morphological comprehension wherein shared reading accounted for 7% of the unique variance in morphological comprehension after controlling for the effects of child nonverbal intelligence, parent education, and parent literacy. Additionally, child syntax comprehension was found to be influenced by parents’ print exposure; such that, parent literacy mediated the relationship between shared reading and children’s syntax comprehension (Senechal et al., 2008). This mediated relationship suggests the importance of parent literacy and provides additional support for the need to provide effective mesosystemic interventions.

The last finding obtained via this research study regarding the relationship between shared reading and narrative ability has important implications for the present study. Specifically, Senechal et al. (2008) found no association between shared reading and children’s narrative skills, a finding contrary to researchers’ hypothesis that exposure to stories and multiple story lines would foster the ability to extract key structural elements of narratives. Researchers explained this hypothesis may have been faulty in that it presupposed children at age four possessed the ability to understand and

independently utilize key narrative elements of storytelling, which remains to be determined (Senechal et al., 2008).

The findings obtained by Senechal et al. (2008) may suggest that book and personal storytelling may represent different skill-set genres requiring different schemas. This line of thinking would support the omission of narrative measures from research examining the influence of shared reading techniques because narrative ability may not be directly supported through this type of intervention, especially within the preschool-age population.

Although Senechal et al. (2008) found no association between shared-book reading and narrative ability in a group of children with well-educated mothers, Zevenbergen, Whitehurst and Zevenbergen (2003) examined this relationship in a group of children enrolled in Head Start. Zevenbergen et al. found that participation in a shared-book intervention program positively impacted the narrative skills of low-income preschoolers. Specifically, four-year-olds who participated in the shared-book intervention were significantly more likely to use evaluative devices in their narratives. For example, these children were significantly more likely to use dialogue and refer to characters' inner states. Zevenbergen et al. also concluded that children who participated in the intervention gained specific narrative skills (i.e., they did not just demonstrate expressive vocabulary growth and "talked more").

Overall, research examining parent-child shared reading as an intervention for economically at-risk early learners is plentiful, suggesting this type of home-based parental support may be important to reading development. Furthermore, results obtained by Dodici et al. (2003) regarding in home observation data versus parental report of early

literacy environments supported the need to assess the *quality* of parent-child interaction in addition to the presence or absence of literacy activities in the home environment. Formal, manualized systems of shared reading provide this quality of parent-child interaction. Dialogic reading is one example of a shared reading system that has been developed with empirical backing.

Dialogic Reading

Overview. According to the U.S. Department of Education Institute of Educational Sciences' What Works Clearinghouse (WWC), dialogic reading is an interactive method of shared picture book reading that has been explicitly designed to foster language and literacy skills in young children (2007). This method is defined by structured shared reading activities where an adult questions the child and serves as his or her active listener (WWC, 2007). Essentially, dialogic reading is a process wherein families read *with* their children as opposed to reading *to* their children (Fielding-Barnsley & Purdie, 2003).

Two acronyms have been developed in order to facilitate use of dialogic reading techniques: CROWD and PEER (WWC, 2007). "CROWD" is used to guide adult prompting during book reading with a child. The completion (C) technique prompts the child to "fill in the blank" at the end of an adult's sentence. The recall (R) technique involves an adult asking questions about a book the child has already read. The open-ended (O) technique involves the adult encouraging the child to tell or explain what is happening in a picture. The wh- (W) prompt is used to guide the adult's employment of 'wh-' questions (i.e., who, what, where, why) about pictures in a book. Lastly, distancing

(D) is a process that the adult uses to relate pictures and words experienced in the storybook to the child's own lived experiences outside of the book (WWC, 2007).

The five types of prompts (CROWD) are used by adults according to dialogic reading technique, which is summarized by the acronym "PEER": P refers to the adult *prompting* the child to say something about the book, E refers to the adult *evaluating* the child's response, E refers to the adult *expanding* upon the child's response, and R refers to the need for adults to repeat the prompt (WWC, 2007).

By assuming a social-constructivist orientation of book reading, children's vocabulary is enhanced through intensive support from adults during the reading process, not just from the book alone. According to Mol, Bus, Jong, and Smeets (2008), children's reading development becomes dependent upon the social context of shared reading. Therefore, in order to effectively intervene, one must target the medium through which children are acquiring information about reading and expanding their vocabularies: the social interaction between the adult reader and the child (Mol et al., 2008). The purported benefits of this intervention include fostering an interest in books on a general level and building one's vocabulary through reading them. Because the entire book reading paradigm is dependent upon the social context inherent to shared book reading, this social interaction is an opportune target for early reading interventions such as dialogic reading.

Research. Dialogic reading was developed in the 1980s by Whitehurst and colleagues (1988) who are credited with publishing the first study to use this intervention (WWC, 2007). Dialogic reading techniques are related to the other shared book reading practices discussed above; however, the developers of this technique sought to 'optimize'

parental reading to young children by instructing parents to increase their open-ended questions, function/attribute questions, and use expansions (Whitehurst et al., 1988).

Specifically, Whitehurst and colleagues (1988) examined child expressive language ability as a function of home-based parental intervention in a group of 29 children between 21 and 35 months of age with normal developmental and linguistic status. Screening tests used to identify children with delays were administered during the first session and indicated that the expressive, receptive, and performance skills of all children were within normal ranges. All children were from middle-class, intact families with suburban residences.

Child-parent dyads were randomly assigned to an experimental group and a control group, and the two groups did not significantly differ with respect to the following characteristics and measures: child sex, performance on pretest measures, chronological age (child: $M = 29.4$ months, $SD = 4.1$ and $M = 27.9$, $SD = 2.9$ for experimental and control group, respectively), number of children in the family ($M = 1.4$ for both groups), years of completed education (maternal; $M = 15.3$, $SD = 2.5$ and $M = 15.8$, $SD = 1.8$ for experimental and control group, respectively), initial frequency of shared storybook reading per week reported by mother ($M = 7.57$, $SD = 3.4$ and $M = 8.2$, $SD = 4.5$ for experimental and control group, respectively), frequency of reading sessions per week reported by mother during first two weeks of intervention ($M = 7.5$, $SD = 1.9$ and $M = 8.2$, $SD = 2.4$ for experimental and control group, respectively), and frequency of reading sessions per week reported by mother for the final two weeks of intervention ($M = 7.1$, $SD = 1.7$ and $M = 6.6$, $SD = 2.1$ for experimental and control group, respectively), as well as the upper limit measure of child initial mean length of utterance.

The research procedure used by Whitehurst et al. (1988) employed an experimental group and a control group. The experimental group participated in a 4-week intervention consisting of two, 2-week phases. Parents received instruction on changing the frequency and timing of components of their child-directed speech during shared story time. Control group participants read to their children but were not instructed to change their reading behavior. The importance of reading picture books as way to promote children's language development was stressed to all participants.

To monitor fidelity of intervention implementation, all parents were instructed to record reading sessions with their child 3 or 4 times per week on an audiotape. Weekly phone calls were also made to all parents to remind them to complete taping and assignments. A calendar-like checklist was also provided to all parents to create a record of all taped and untaped reading sessions, thus monitor how frequently sessions occurred within the home (Whitehurst et al., 1988). Experimental group parents also received a handout describing the techniques in which they were trained to remind them to complete the assignment (i.e., reading sessions 3-4 times per week).

After 4-weeks, post-test data collection was conducted at the same university location that was used during pre-test data collection. The following measures were used: verbal expression subscale of the Illinois Test of Psycholinguistic Abilities (ITPA; as cited in Whitehurst et al., 1988), Peabody Picture Vocabulary Test-Revised (PPVT-R; Dunn & Dunn, 1981), and the Expressive One Word Picture Vocabulary Test (EOWPVT; as cited in Whitehurst et al., 1988). Follow-up testing was also completed on 22 of the original participants nine months following post-testing.

Three, simultaneous one-tailed t tests were conducted due to the fact that all experimental hypotheses were directional in nature with a Bonferroni correction controlling for Type I error inflation (Whitehurst et al., 1988). Statistically significant differences were obtained on the ITPA, $t(27) = 3.941, p = .005$ (one-tailed), and the EOWPVT, $t(27) = 2.513, p = .009$ (one-tailed), and differences approached significance on the PPVT, in favor of the experimental group, $t(27) = 1.555, p = .0655$ (one-tailed). Whitehurst and colleagues (1988) concluded that the significant results obtained above, as well as the PPVT result that favored the experimental group, suggests that “variations in reading to young children can have appreciable effects on language development” (pp. 555-556). Whitehurst et al. asserted three dialogic reading hallmarks are critical to effective implementation and successful outcomes: 1) use of open-questioning over closed-questioning to create active engagement versus passive listening; 2) provide maximally informative feedback (e.g., expand upon what a child said, use modeling to correct content, etc.); and 3) increase the complexity of adult questions and prompts as children’s abilities change (e.g., names of objects in a book must be mastered before discussion can turn to their attributes).

Huebner (2000b) attempted to replicate the positive findings obtained by Whitehurst et al. (1988) and extend this line of research by assessing the impact of using dialogic reading programs in community settings. The researcher evaluated an adaptation of dialogic reading for use in public libraries to promote toddlers’ language development. The primary modification stems from differences made in training format. The study used group-based training administered by trained librarians instead of individual-based trainings administered by researchers or research affiliates. This change in training format

was employed in order to disseminate the dialogic reading program across four sites and 88 families. The experimental group received dialogic reading training using this new format, and the control group received the preexisting library services for parents with young children. For example, control group parents could participate in discussions of appropriate picture books and craft activities for use with young children.

Similar to results obtained previously, Huebner (2000b) found intervention group gains in parent reading style and children's expressive language compared to baseline levels beyond gains experienced by the control group. This finding suggests that exposure to a dialogic reading program substantially influences the manner in which parents read storybooks to their children by increasing the use of dialogic techniques as well as influencing child language development with respect to verbal expression. Although significant gains were not made on measures of vocabulary development, the researcher attribute this lack of significance to children's baseline skill levels (all children were talkative and using three to four-word sentences) coupled with the use of brief standardized tests (*Peabody Picture Word Vocabulary Test-Revised* [PPVT-R]; Dunn & Dunn, 1981; *Early one-Word Picture Vocabulary Test-Revised* [EOWPVT-R] Gardner, 1990).

Huebner (2000b) cited previous studies that established single-word vocabulary tests were able to detect vocabulary improvement after the use of dialogic reading programs for groups of younger or less-mature children. Additionally, research examining gains made by children with lower baseline levels of performance contradict the findings obtained by Huebner (2000b). Specifically, gains were made in measures of vocabulary development, not verbal expression (e.g., Lonigan, 1993; Whitehurst et al.,

1993). For example, children with poor expressive vocabulary whose caregivers participated in a dialogic reading program made significantly greater gains compared to a group of similarly delayed children who experienced traditional shared book reading (Hargrave & Senechal, 2000). Specific gains were made with respect to: 1) vocabulary presented in the dialogic reading books and 2) expressive vocabulary as measured via the EOWPVT (Hargrave & Senechal, 2000).

Lever and Senechal (2011) examined the effects of dialogic reading on fictional narrative construction skills of five- and six-year-old children. Participants were assigned to a dialogic reading group, where a trained adult used dialogic reading techniques for two 20-minute reading sessions per week for 8 weeks, or a control group that received alternative treatment. Children who received dialogic reading intervention were found to produce narratives that were better structured and more appropriately decontextualized than children who received alternative treatment. Dialogic reading intervention was found to increase the number of references to mental states and emotions, but did not affect narrative language complexity or use of cohesive ties. Consistent with previously discussed research examining dialogic reading, gains in expressive vocabulary were found. Overall, dialogic reading intervention had a significant positive impact on the narrative elements related to story comprehension (i.e., structure and appropriate decontextualization).

Swanson et al. (2011) conducted a synthesis and meta-analysis of research investigating the effects of storybook read-aloud interventions for children ages 3 to 8 at-risk for reading difficulties. Specific interventions included in this analysis were: dialogic reading, repeated reading of stories, story reading with limited questioning before,

during, and/or after reading, computer-assisted story reading and story reading with extended vocabulary activities. Although only a small amount of outcome variance was accounted for by intervention type, significant positive effects on children's literacy outcomes were obtained. Eight experimental studies investigating the effects of dialogic reading were included in the analysis, which gave this intervention the most causal evidence to support its effects on literacy outcomes. Specifically, moderate to large mean effect sizes were obtained for the child outcomes of phonological awareness, print concepts, reading comprehension, and vocabulary. Therefore, previously conducted research suggests dialogic reading techniques can improve literacy outcomes for children at-risk for reading difficulties.

Swanson et al. (2011) also reported that dialogic reading interventions were significantly outperformed by computer-assisted interventions on reading comprehension and vocabulary outcomes. However, the outcome measures employed by the researchers must be taken into account when interpreting this finding. Computer-assisted studies utilized researcher-developed measures that assessed knowledge of words that appeared in the book read by the student, whereas dialogic reading studies utilized standardized measures of broad vocabulary outcomes. Despite the aforementioned interpretative limitations, "Currently, the strongest evidence comes from dialogic reading interventions, suggesting that incorporating extended child-adult dialogue and questioning around storybooks is a valuable practice in educational settings" (Swanson et al., 2011, p. 272).

Research examining effects of DR on at-risk populations. Similar to research discussed in previous sections, Huebner (2000b) examined the effect of a dialogic reading intervention designed to improve the quantity and quality of shared book reading

within low-SES homes. The study conducted by Huebner extended this line of research in the following ways: a larger, more uniform sample of children with low-SES was obtained, parents participated, and an earlier age range was examined. All 61 participant dyads (mother and child) were from families with low-SES and children were between 2 and 3 years old (Huebner, 2000b). The dialogic reading program intervention was shorter than the intervention discussed previously but core techniques remained consistent, including asking questions, elaborating on children's responses, and giving praise.

Results of this study supported the argument that shared reading benefits children at greater risk of developing poor reading skills (Huebner, 2000b). The frequency of home reading and child's reading enjoyment (assessed through parental perception) increased. Also, reading in the question-answer style most typically used in schools became more common within the home (Huebner, 2000b). These results, among others, suggest improving parent-child activities that support reading development within the home can result in successful development of early reading skills in at-risk children with low-SES (Hockenberger et al., 1999; Huebner, 2000b). Further research is necessary to examine whether these results can be obtained in older populations of similarly at-risk children.

The meta-analysis conducted by Mol et al. (2008) determined that dialogic reading was less meaningful in terms of expressive vocabulary gains for older children and those at risk for language and literacy impairments. Researchers postulated that this may be due to parents experiencing difficulty adapting dialogic reading techniques for use with older children. Using dialogic reading with older children (i.e., 4 or 5 years old) targets more advanced reading skills and requires the use of more advanced questions, as

well as evaluating and expanding upon student responses, and having children repeat expanded responses (Mol et al., 2008). The researchers also reported that older children may prefer to hear stories uninterrupted, because they may find questioning using dialogic reading techniques interfering and bothersome instead of stimulating.

The meta-analysis also resulted in the finding that groups at risk for language and literacy impairments received less benefit from dialogic reading than those not at risk (Mol et al., 2008). Two potential explanations offered by the researchers were reported as follows: parents may be required to have a strong educational background to effectively implement dialogic reading techniques, and asking children within this at-risk population to make inferences may be beyond their present ability level.

Overall, researchers concluded that parent training in dialogic reading techniques was not a particularly effective standalone intervention for increasing low-income children's language development. Of note to the current study, Mol et al. hypothesized that dialogic reading might be more effective with older low-SES children who have more advanced language skills relative to younger children with low-SES. Additional research examining whether older children at-risk receive greater benefit from dialogic reading than younger children at-risk is needed.

Similarly, research conducted by Reese, Leyva, Sparks, and Grolnick (2010) found that dialogic reading training with low-income mothers did not result in children's narrative or expressive vocabulary skills growth as was hypothesized. Results actually indicated that children participating in the dialogic reading intervention showed a decline in their narrative quality scores over time, whereas children in the control group and the maternal elaboration intervention group showed increases in narrative quality from

pretest to posttest. Dialogic reading and maternal elaborative reminiscing are similar in that using open-ended questions, expanding upon children's utterances, and increasing child participation are the primary strategies stressed; however, maternal elaborative reminiscing focuses on conversations about past events. Reese et al. concluded that maternal elaborative reminiscing increased narrative quality over dialogic reading. However, the researchers acknowledged that failure to conduct a second home visit to monitor the implementation of dialogic reading techniques in the home was a limitation of the study. Parents may not have implemented dialogic reading with fidelity, which would also account for the lack of gains and/or regression in skill using this intervention.

Training methods. Several studies have been conducted to examine the effectiveness and acceptability of various dialogic reading training models. Methods employed include: 1) one-on-one adult reader training, 2) training multiple adult readers simultaneously in a group format, and 3) training groups of adult readers with an instructional video paired with or without supplemental training (Arnold, Lonigan, Whitehurst, & Epstein, 1994; Blom-Hoffman, O'Neil-Pirozzi, & Cutting, 2006; Blom-Hoffman, O'Neil-Pirozzi, Volpe, Cutting, & Bissinger, 2006; Huebner & Meltzoff, 2005). In the seminal research study conducted on dialogic reading, mothers served as the adult readers and received two 30 minute training sessions two weeks apart (Whitehurst et al., 1988). Each instructional session was composed of didactic instruction, modeling, and role play activities coupled with direct feedback from a training session facilitator. Though this individual training was effective (i.e., trained mothers employed dialogic reading techniques with fidelity, children's performance on tests of language skills

improved, and most gains were maintained at 9-month follow-up evaluations), researchers sought to develop a more cost-effective training procedure.

In 1994, Arnold and colleagues sought to replicate the original study conducted by Whitehurst et al. (1988) and extend these findings by comparing the training methods employed by the preliminary researchers of this program with the (then) newly developed inexpensive video-based training format for teaching dialogic reading techniques. Specifically, instead of receiving individual training, researchers compared the child reading outcomes (e.g., expressive vocabulary, receptive vocabulary, basic grammar skills such as pluralization, etc.) of a group of parents who received video-based training to the child outcomes of parents who had received traditional training. A control group of parents and children who received no training was also included within these comparisons (Arnold et al., 1994). In general, results supported the initial findings obtained by Whitehurst et al. (1988) suggesting dialogic reading techniques facilitate child language skills, although the magnitude of child gains was not matched. In addition, video-based training was found to be a more effective training method compared to traditional training for implementing a dialogic reading program in terms of cost and student outcome (Arnold et al., 1994).

Researchers hypothesize that training formats may differ in terms of effectiveness because the use of multiple trainers can result in lapses in standardization. These lapses are avoided by using a standardized training video; furthermore, the video-based training provides modeling opportunities which have been identified as an important component of training (Arnold et al., 1994). Arnold and colleagues (1994) also assert low-income families are most in-need of the benefits of effective early literacy interventions, such as

dialogic reading, but the effects of video training with this population has not been fully examined. Research applying the use of video training to caregivers during routine visits to community health centers has yielded positive findings in terms of parent acceptability and child gains (Blom-Hoffman, O'Neil-Pirozzi, & Cutting, 2006; Blom-Hoffman, O'Neil-Pirozzi, Volpe, et al., 2006). However, this line of research has failed to explore the use of video-based training on a group of parents uniformly experiencing profound economic risk.

In addition to the preliminary video training research conducted by Arnold et al. (1994), Huebner and Meltzoff (2005) compared the effectiveness of three types of dialogic reading training programs: in-person with video instruction in small groups, self-instruction by video with telephone follow-up, and self-instruction by video alone. In sum, results suggested that instruction dramatically increased parents' use of dialogic reading techniques, which few had used before training, and children's language demonstrated significant positive effects (e.g., number of words and mean length of utterances during shared reading; Huebner & Meltzoff, 2005). Of importance with regard to training format comparisons, substantial preference for in-person instruction over self-instruction was suggested and stratification of data by parental education suggests in-person instruction is the more effective format, especially for parents with only high school education.

Huebner and Payne (2010) conducted a follow-up investigation to determine if parents continued to use dialogic reading techniques after the conclusion of the original investigation. Approximately half of the participants had received training by participating in the dialogic reading intervention study conducted by Huebner & Meltzoff

(2005). The other half of the participants received no prior training. Parent-child reading was evaluated more than two years after the original training occurred. Significant differences in parents' use of dialogic reading techniques were obtained between the two groups, and these differences were maintained when the effects of maternal education, child's age and frequency of family reading were controlled. Specifically, parents who received training used 90% more dialogic reading behaviors, on average, than parents without training in dialogic reading techniques. Follow-up analysis found that the brief dialogic reading training used by Huebner and Meltzoff (2005) lead to lasting changes in parents' reading style (Huebner & Payne, 2010). Overall, results provide strong support for the ability to create lasting change in parents' reading style through brief instructional training.

Although Huebner and Meltzoff (2005) explored the use of dialogic reading within a range of participant families, many demographic variables inherent to this sample may not be representative of populations experiencing low-SES. For example, although some participants within this study (i.e., <12% of participant families) had incomes falling below federal poverty guidelines, 89% of families examined were living with a spouse or partner creating two-parent family units within the home and the 'average' years of education included some college. This data is also preliminary in nature (e.g., small number of adult-child dialogic reading dyads, etc.). Therefore, generalization of the results cannot be used to readily conclude video-training alone is an effective means of providing dialogic reading instruction for individuals at economic risk in a way that will benefit the reading development of children.

Briesch, Chafouleas, Lebel, and Blom-Hoffmant (2008) used a small sample of caregivers ($n = 6$) to investigate the integrity of using dialogic reading techniques with preschoolers after caregivers viewed a commercially available training video: *Read Together, Talk Together* (RTTT; Pearson Early Learning, 2002). Previous research examining the effectiveness of the RTTT training video resulted in large effect sizes for the group of caregivers using dialogic reading techniques ($d = 2.26$) compared to a wait-list group who did not receive video training (Blom-Hoffman et al., 2006). Briesch and colleagues (2008) analyzed participants' baseline, intervention, and follow-up reading sessions that were recorded on audiotapes. The researchers concluded that caregivers effectively learned to use several dialogic reading techniques when reading with their preschool-age children after receiving video-based training, but supplemental training may be necessary to ensure certain strategies are implemented with integrity.

Additional research is necessary to determine whether dialogic reading using video-based training is more beneficial for families at economic risk or whether groups experiencing less risk have advanced skills that allow them to benefit from dialogic reading intervention (Arnold et al., 1994).

Rationale for Home-Based Support of Reading Development

The studies discussed above suggest that parental reading support within the home can be an effective method for improving the vocabulary and early literacy skills of children. Poor literacy skills and associated reading insecurities of some parents with low-SES could prevent them from engaging in these crucial early literacy activities with their children, perpetuating the cycle of poor reading development. Rush (1999), Dodici and colleagues (2000), Hockenberger and colleagues (2000), Huebner (2000), Primavera

(2000), and Bus and colleagues (1995) provide important information about the role of parents and specific home-based literacy activities on the development of adequate reading skills in children with low-SES. Above all, these studies stress the importance of supportive parents. Relatively simple intervention programs that teach parents how to foster reading development within the home can positively influence the reading development of an especially at-risk population.

Fostering a parent's ability to support his or her child's reading development in the home can result in successful development of early reading skills in high-risk children with low-SES (Hockenberger et al., 1999; Huebner, 2000). Research also suggests parents who effectively engaged in mutual literacy activities were able to support the development of school readiness and emergent literacy skills in their preschool-age children (Primavera, 2000; Wood, 2002). Although the aforementioned studies examined a host of techniques for fostering reading development at home, the quality and responsiveness of the home environment, even more than the specific forms of support implemented therein, may contribute most substantially to reading development (Roberts, Jurgens, Burchinal, 2005). The use of empirically supported reading development techniques provides one method for introducing high-quality parent-child interaction in the low-SES population; although, it is unlikely a single strategy will provide the ultimate reading development 'cure-all.' Therefore, emphasis should be placed on developing high quality home environments within the low-SES context that are responsive to children's needs, including literacy needs, instead of focusing entirely on the promotion of a single strategy. Without quality and responsiveness serving as a foundation for intervention, any form of support would likely have limited effects.

Conclusion

Parent support is a highly influential factor within the SES-reading development relationship. Specifically, parental involvement has been identified as a primary factor in supporting low-SES reading development (Shaver & Walls, 1998; Raffaele & Knoff, 1999). The frequency of parental involvement in children's preschool/kindergarten years as well as the number of activities in which parents participated has been significantly related to children's reading achievement, lower rates of grade retention, and fewer special education placements (Miedel & Reynolds, 1999); furthermore, high levels of parental involvement have been found to effectively control for the effects of low maternal education on program success (Dearing et al., 2004).

In addition to school involvement, research conducted by Rush (1999), Dodici and colleagues (2000), Hockenberger and colleagues (2000), Huebner (2000), and Primavera (2000) provide insight into the role of parents and specific home-based literacy activities on the development of adequate reading skills in children with low-SES. These studies stress the foremost importance of supportive parents. The researchers concluded that a variety of intervention programs teaching parents how to foster reading development within the home can positively influence the reading development of an especially at-risk population. In summary, the research discussed thus far has suggested two major findings of importance at present: parental support through involvement with the child's school or early learning center and parental support through parent-child interaction and shared reading activities within the home foster successful reading development in populations of children with low-SES. A home-based dialogic reading program is capable of incorporating elements from both of these findings. Specifically,

early learning center involvement can be provided through center-based technique training and fidelity monitoring. In addition, the core feature of dialogic reading involves improved shared reading activities within the home environment, thus fostering home-based parental support to supplement instruction received in the school environment.

Dialogic reading is an interactive method of shared picture book reading that has been explicitly designed to foster language and literacy skills in young children (WWC, 2007). This method is defined by structured shared reading activities where an adult questions the child and serves as his or her active listener. Numerous research studies have examined its efficacy and impact on developing learners as well as the various training methods that can be employed (e.g., Arnold et al., 1994; Blom-Hoffman et al., 2006a; Blom-Hoffman et al., 2006b; Huebner, 2000a; Huebner, 2000b; Huebner & Meltzoff, 2005; Whitehurst & Epstein, 1994; Whitehurst et al, 1988). Overall, the program has a history of creating positive changes in reading development (Huebner, 2000a), including in populations of children with low-SES, although additional research examining older children (i.e., preschoolers vs. toddlers) in at-risk environments is needed. In addition, videotape training provided in-person has been found to be an effective component of intervention implementation yielding successful outcomes, especially for parents with modest levels of formal education (Huebner & Meltzoff, 2005).

Future Research

Future research examining the impact of implementing early intervention strategies for students who are at risk for unsuccessful reading development is necessary. The benefits of intervening early are well-documented and include improving student

outcomes by reducing problems experienced later in life (e.g., substance abuse, juvenile delinquency); essentially, children involved in successful early intervention programs may experience better outcomes including future academic success (National Association of School Psychologists; NASP, 2003). Early intervention could provide an effective means for addressing the pressing societal concern regarding unsuccessful reading development in low-SES environments. Furthermore, the focus on attaining mastery of ‘fundamental’ skills learned early in reading development, a central tenet of current early literacy instruction theory, strengthens the argument that early intervention is an appropriate and necessary course of action to bring about positive change within this population (Christie, 2008).

As the research summarized above suggests, the role of parental support in low-SES households is an area in need of additional exploration. A particular topic to be explored is the additive effect of parent use of dialogic reading techniques to supplement classroom instruction. A study examining the interaction between parental support in the home and support provided in the early learning center would be an important step toward addressing the needs of developing readers within low-SES populations.

Chapter 3: Methods

Participants

Six children were included in the study. All participants were enrolled at an early learning center (ELC) located in a small urban area in the northeastern United States characterized by low-SES, modest educational attainment, and higher-than-average rates of crime per regional trends based on community size. The selected ELC serves families whose net income does not exceed 100% of the Federal Poverty Guidelines, families who receive or have received Public Assistance benefits within the past 12 months, families receiving Supplemental Security Income (SSI), families who are homeless as well as children who are in foster care.

Participants reflected the demographic characteristics of this at-risk community. No exclusionary criteria were based on race, ethnicity, or gender of child or caregiver. Of the six children enrolled, one child withdrew from the early learning center prior to completion of the study. The remaining five children (four male, one female) participated in the entire investigation. All children were African American and spoke English as their primary language. All children were age-eligible to begin kindergarten the following school year in the regular education setting (i.e., no students received Early Intervention special education services). One child was 4 years-old, and the remaining children were 5 years of age. With regard to caregiver participants, four mothers were included, and one grandmother who serves as a primary caregiver of the child participant. All caregivers lived in the community in which the preschool program was located.

Measures

A comprehensive review of the literature in the preceding section resulted in the selection of several instruments with established reliability and validity in the preschool setting. Instruments were used to obtain measures of receptive and expressive vocabulary in the current study. Individual examination of each instrument follows.

Peabody Picture Vocabulary Test- Fourth Edition

The Peabody Picture Vocabulary Test- Fourth Edition (PPVT-4) provides information about the receptive vocabulary of children and adults (Dunn & Dunn, 2007). This wide-range instrument is norm-referenced and individually administered. One of two parallel forms (i.e., Form A and Form B) is available for use to prevent practice effects. Each form is comprised of training items and test items wherein the examinee identifies which of four full-color pictures best illustrates the meaning of the stimulus word spoken by the examiner. Scoring is rapid and objective and typically completed during administration. Additionally, items are grouped into sets of increasing difficulty, which eliminates administration of unnecessary items (i.e., overly simplistic or difficult) making for a more expeditious administration of sets appropriate for the examinee's vocabulary level while simultaneously guarding against basal or ceiling effects.

A representative sample of 3540 people aged 2 years 6 months through 90 years and older across regions in the United States was used to create age norms for this instrument. In addition, the PPVT-4 was conormed with the Expressive Vocabulary Test- Second Edition (EVT-2; Williams, 2007) to provide the examiner with a comprehensive evaluation of an examinee's receptive and expressive vocabulary attainment (Dunn & Dunn, 2007). Raw scores can be converted into the following: standard scores, percentiles, normal curve equivalents, stanines, and age and grade equivalents. Another

feature of the PPVT-4, new to this edition, is the growth scale value (GSV), which is particularly useful for measuring change. For the current study, the PPVT-4 provided pre- and post-intervention measures of receptive vocabulary for children 4 to 5 years of age.

Reliability. *Internal consistency reliability.* Measures of internal consistency reliability (i.e., consistency of performance on different test sections) include split-half reliability and coefficient alpha (Dunn & Dunn, 2007). Split-half reliability was computed by dividing the form into halves (even-numbered items vs. odd-numbered items) then using the anchored item difficulty values to convert raw scores on the halves to Rasch ability scores, which were then correlated, finally the Spearman-Brown prophecy formula was used to estimate the preliminary reliability coefficient for the full length of each form (referencing the standard deviation of ability scores prevented differences between forms from affecting results).

Split half reliability scores were reported to be consistently high across the entire age and grade ranges, with values consistently reported averaging .94 or .95 on each form. Of particular interest to the current study, reliability at the preschool ages tended to be at least as high, if not higher than at the older ages and higher grades (Dunn & Dunn, 2007). With respect to the specific age group of interest in the current study, split-half reliability for children aged 4 years through 4 years 5 months was .94 and .92 for Form A and Form B, respectively. For children aged 4 years 6 months to 4 years 11 months, scores were .96 for both forms. For children aged 5 years through 5 years 5 months scores were .95 and .94 and for children aged 5 years 6 months through 5 years 11 months scores were .93 and .95, respectively (Dunn & Dunn, 2007). In addition, coefficient alpha is consistently high at all age and grade levels (i.e., .97 and .96 average

for Forms A and B respectively); however, alpha cannot be computed with unadministered items present, and the technique used for filling in items that were not administered tends to result in overestimates (Dunn & Dunn, 2007).

Alternate-form reliability. Similar to internal consistency reliability, alternate-form reliability is an indication of the similarity in performance on different but parallel test forms administered to the same group of examinees at approximately the same time. All correlations between Form A and Form B age-based standard scores fall between .87 and .93 with a mean reliability of .89 (Dunn & Dunn, 2007). The correlations of alternate forms of particular importance to the current age-group are as follows: $r = .90$, adjusted $r = .90$ for children aged 2 to 4 and $r = .86$; *adjusted r* = .90 for children aged 5 to 6.

Test-retest reliability. Although internal consistency reliability and alternate-form reliability are sensitive to measurement error stemming from using different sets of items, test-retest reliability is measured by readministering the same set of items after a period of delay. Therefore, measurement error arising from using multiple item sets does not contribute to this form of reliability, but it is sensitive to error caused by variability over time (e.g., examiner variables related to administration state such as fatigue, motivation, etc.) in addition to any differences in the administration procedure (Dunn & Dunn, 2007). Additional causes of variability include practice effects from prior administration, learning occurring during the intervening period, and unintentional differences in administration procedure. During standardization, the average test-retest reliability correlation using two administrations an average of four-weeks apart was .93 (ranging from .92 to .96; Dunn & Dunn, 2007). For children aged 2 to 4 years, $r = .91$; *adjusted r* = .93 and for children aged 5 to 6 years, $r = .94$; *adjusted r* = .92.

Validity. Construct validity. What the PPVT-4 measures, (i.e., construct validity) can be examined through various types of evidence including correlations with other tests, with the argument being that high correlation suggests consistency between instruments reporting to measure the same construct (e.g., vocabulary). Dunn and Dunn (2007) report that correlations between the PPVT-4 and the Expressive Vocabulary Test – Second Edition (EVT-2) are uniform across age and range from .82 to .84. This finding suggests about two-thirds of the variance between the instruments is shared and supports the assertion that both measure vocabulary knowledge; however, the correlation is less than the average correlation between alternate forms of the PPVT-4 (i.e., $r = .89$), which makes sense considering the EVT-2 taps into word retrieval skills in addition to measure of vocabulary, whereas the PPVT-4 does not measure retrieval. Additionally, correlations with other instruments (e.g., Comprehensive Assessment of Spoken Language [CASL], Carrow-Woolfolk, 1999; Clinical Evaluation of Language Fundamentals, Fourth Edition [CELF-4], Semel, Wiig, & Secord, 2003) were reported in the moderate-to-high range, suggesting measurement of related but disparate oral language abilities. Notably, correlations for the preschool age group fell within the moderate range (.41-.54), which may be an artifact of the challenges with using expressive language tests with young children. Specifically, obtaining reliable tests scores on a challenging expressive task that includes retrieval demands may be difficult when working with preschoolers.

Content validity. Qualitative evidence for the content validity for the PPVT-4 can be drawn from the stimulus word selection process (Dunn & Dunn, 2007). As a measure of comprehension of spoken American English vocabulary, stimulus words were primarily selected from a collection of words within the Merriam-Webster's Collegiate

Dictionary (2003) and the Webster's New Collegiate Dictionary (1953, 1967, 1981) that could be illustrated through color drawings and represent 20 content areas (Dunn & Dunn, 2007).

Expressive Vocabulary Test-Second Edition

The Expressive Vocabulary Test, Second Edition (EVT-2) is an individually-administered instrument used to provide information about an individual's expressive vocabulary and word retrieval skills (Williams, 2007). This test is norm-referenced and may be used to assess individuals aged 2 years 6 months through 90 years and older. Expressive vocabulary is assessed through items involving labeling or synonym generation. Specifically, the examinee is prompted to label a picture presented on a easel by responding with one word when a stimulus question is posed by the examiner (e.g., What do you see? or What is she doing?) or provide a synonym for a word that describes the picture context when prompted by a stimulus question posed by the examiner (e.g., Tell me another word for ____). Word retrieval is assessed by examining differences in expressive and receptive vocabulary skill through a comparison of standard score differences between the EVT-2 and the conormed PPVT-4.

One of two parallel forms (i.e., Form A and Form B) is available for use to prevent practice effects and is useful for progress monitoring, of particular note for the current study. Each form is comprised of training items and test items that increase in difficulty and basal and ceiling rules ensure items that most closely approximate ability levels are administered. For the current study, the EVT-2 provided pre- and post-intervention measures of expressive vocabulary for children 4 to 5 years of age.

Reliability. *Internal consistency reliability.* Measures of internal consistency reliability include split-half reliability and coefficient alpha (Williams, 2007). Split-half reliability was based on a correlation of an individual's even-numbered total item score with his or her odd-numbered total item score using the same methodology as outlined in the previous review of the PPVT-4 (see above). Split half reliability scores were reported to be consistently high across the entire age and grade ranges, with values reported averaging .94 and .93 by age on Form A and Form B, respectively. Of particular interest to the current study, reliability at the preschool ages tended to be comparable to the average values reported above (Williams, 2007). With respect to the specific age group of interest in the current study, split-half reliability for children aged 4 years through 4 years 5 months was .94 and .95 for Form A and Form B, respectively. For children aged 4 years 6 months to 4 years 11 months, scores were .94 and .92, respectively. For children aged 5 years through 5 years 5 months scores were .95 and .95 and for children aged 5 years 6 months through 5 years 11 months scores were .95 and .93 (Williams, 2007). In addition, coefficient alpha is consistently high at all age and grade levels (i.e., .96 average for the 28 age groups on Forms A and B); however, alpha cannot be computed with unadministered items present, and the technique used for filling in items that were not administered (because participants complete subsets according to basal and ceiling rules) tend to result in overestimates (Williams, 2007).

Alternate-form reliability. Similar to internal consistency reliability, alternate-form reliability is an indication of the similarity in performance on separate full-length tests administered to the same group of examinees at approximately the same time as opposed to a comparison of different subsets of an individual test (Williams, 2007). All

correlations between Form A and Form B age-based standard scores fall between .83 and .91 with a mean reliability of .87 (Williams, 2007). The correlations of alternate forms of particular importance to the current age-group are as follows: $r = .91$, adjusted $r = .91$ for children aged 2 to 4 and $r = .80$; *adjusted r* = .85 for children aged 5 to 6.

Test-retest reliability. Test-retest reliability is measured by readministering the same set of items after a period of delay; therefore, measurement error arising from using multiple item sets does not contribute to this form of reliability, but it is sensitive to error caused by variability over time (e.g., examiner variables related to administration state such as fatigue, motivation, etc.) in addition to any differences in the administration procedure (Williams, 2007). Additional causes of variability include practice effects from prior administration, learning occurring during the intervening period, and unintentional differences in administration procedure. Results from the standardization process suggest a small amount of learning or practice occurred resulting in a three-point score increase during the second administration, on average (Williams, 2007). However, the average test-retest reliability correlation using two administrations was .95 (ranging from .94 to .97). For children aged 2 to 4 years, $r = .95$; *adjusted r* = .95 and for children aged 5 to 6 years, $r = .96$; *adjusted r* = .95.

Validity. Construct validity. A primary method for evaluating the construct validity of an instrument such as the EVT-2 is to examine correlations with other tests, such that highly correlated tests measuring similar constructs suggests consistency between instruments (e.g., vocabulary). As reviewed in the preceding section examining the PPVT-4, Dunn and Dunn (2007) report that correlations between the PPVT-4 and the EVT-2 are uniform across age and range from .80 to .84 (mean = .82). Although the

correlation is less than the average correlation between alternate forms of the EVT-2, this finding aligns with the understanding of EVT-2 scores as a measure of word retrieval skills in addition to serving as a measure of vocabulary, unlike the PPVT-4.

Additionally, correlations with other oral language instruments (e.g., Comprehensive Assessment of Spoken Language [CASL], Carrow-Woolfolk, 1999 and the Clinical Evaluation of Language Fundamentals, Fourth Edition [CELF-4], Semel, Wiig, & Secord, 2003) were reported in the moderate-to-high range for elementary school age groups, suggesting measurement of related but somewhat distinct oral language abilities (Williams, 2007). Notably, correlations for the preschool age group fell within the moderate range (.51-.67). Williams (2007) asserted this moderate range suggests that the EVT-2 is not measuring the same construct being measured by the CASL at this age level, which may be an artifact of the challenges with using expressive language tests with young children who are particularly sensitive to the format of administration.

Content validity. Providing evidence for the content validity for the EVT-2 can be accomplished through a succinct review of the content specifications and description of item development (Williams, 2007). Essentially, items were selected based upon two criteria determined to be most important for ensuring an “objective and appropriate” assessment of standard American English vocabulary and word retrieval: frequency and common usage (Williams, 2007, p. 69). Words that could not be acquired through common life experiences were avoided because they would bias results by requiring specialized knowledge. Williams (2007) also reported the use of a “rigorous” review process conducted by content specialists and experts in the field of bias reduction

wherein the statistical properties of items were assessed and field testing was used to determine which items would be included in the final selection.

Picture Naming (PN) Individual Growth and Development Indicator (IGDI)

Individual Growth and Development Indicators (IGDIs), a type of general outcome measure, have been developed to monitor individual child developmental growth over time (McConnell, Priest, Davis, & McEvoy, 2002). Just as curriculum-based measurement can be used to monitor school-age student achievement in specific academic domains, preschool IGDIs were designed to measure skill in a particular developmental domain and monitor individual child growth in this area over time (McConnell et al., 2002). The Early Childhood Research Institute on Measuring Growth and Development (ECRI-MGD) has developed preschool IGDIs related to specific developmental and educational outcomes, including expressive language (Early Childhood Research Institute on Measuring Growth and Development [ECRI-MGD], 1998; McConnell et al., 2002). Picture Naming, an expressive language IGDI, was reported to “appear promising” (McConnell et al., 2002, p. 1237). According to McConnell et al., indicators of preschooler expressive language skill growth were developed using the guiding outcome statement reported as follows: “Child uses gestures, sounds, words, or sentences (including sign language and augmentative or alternative communication) to convey wants and needs or to express meaning to others” (p. 1237).

The present study used Picture Naming (PN) to measure the expressive language skill development in each preschool student before intervention implementation (baseline), during the implementation of dialogic reading support in the home (intervention), and after six weeks of intervention (progress monitoring). Administration

of PN involved presenting the preschooler with index cards on which photographs and realistic illustrations depict objects he or she commonly encounters at home, in the classroom, and in the community. The preschooler was instructed to name the object on the card as quickly as possible. Examiner demonstration and child practice using a sample set of four cards was conducted prior to each administration. Cards were presented individually for one minute. Failure to respond within three seconds of card presentation resulted in an examiner prompt. Failure to respond within two seconds of the examiner's prompt resulted in presentation of the next card. Individual expressive language skill development was measured by the number of pictures able to be correctly identified by the child.

Reliability. According to McConnell et al., “studies of the psychometric properties of this measure—total number of pictures named correctly in 1 minute—have generated strong evidence for its use as an indicator of growth of preschoolers’ expressive language skills” (p. 1238). Missall and McConnell (2004) reported, “Picture Naming scores appear to be relatively stable over time” (p. 5). McConnell et al. reported that 1-month alternate form reliability coefficients range from $r = .44$ to $r = .78$. Furthermore, test-retest reliability across three weeks was reported at $r = .67$ $p < .01$ for a sample of 29 preschoolers (as cited in Missall & McConnell, 2004).

Validity. The correlation between PN and other standardized measures of language development, as well as with presumed correlates within this developmental domain, such as literacy, have been examined (Missall & McConnell, 2004). As reported by Priest, Davis, McConnell, McEvoy, and Shin as well as Priest, McConnell, McEvoy, and Shin, one longitudinal investigation included a sample of approximately 90 preschool

children, including those with disabilities and those living in poverty (as cited in Missal & McConnell, 2004). According to this investigation, PN IGDI was positively correlated with the Peabody Picture Vocabulary Test, Third Edition, with $r = .56$ to $.75$, $p < .001$ (PPVT-3; Dunn & Dunn, 1997) as well as with the Preschool Language Scale-3 (PLS-3; Zimmerman, Steiner, & Pond, 1992) with $r = .63$ to $.79$, $p < .001$.

In addition to strong concurrent relationships between PN and norm-referenced measures of preschool language skills, PN is reported to be sensitive to growth of preschoolers' expressive language skills over time (McConnell et al., 2002). Significant correlations between preschoolers' scores and chronological age were reported at $r = .41$ (longitudinal study) and $r = .63$ (cross-sectional study), including typically-developing children ($r = .63$), children enrolled in Head Start ($r = .32$) and children with disabilities receiving services in early childhood special education classrooms ($r = .48$; McConnell et al., 2002).

Research Design

A multiple baseline design across participants that also used pre-test and post-test measures was implemented to investigate the effects of dialogic reading techniques. Three conditions were employed during the study: baseline, intervention, and progress monitoring. The study was composed of 5 preschool students who formed 3 participant groups as follows: Student A and Student B were the first group, Student C and Student D were the second group, and Student E was the third group. With regard to this design, Gast and Ledford (2010) asserted, "confidence in experimental findings rests solely on inter-subject direct replication (p. 313). The effectiveness of the independent variable (e.g., dialogic reading support) is evaluated by its impact on the *same* dependent variable

across behaviors (e.g., responses to PN IGDI) emitted by *different* participants (e.g., Child A, B, C, D, and E).

Independent Variable

The independent variable for this study was home-based dialogic reading support. The dialogic reading intervention was implemented by caregivers in the home after receiving comprehensive training using the Read Together Talk Together training video (Pearson, 2002) described above. Treatment integrity of the intervention was evaluated through regular caregiver “check-ins” during the drop-off and pick-up transitions at the beginning and end of the school day. Phone calls home were also attempted.

Dependent Variables

Preschool early reading skill development was assessed by measuring oral language ability and expressive language development. The dependent variables in this study were operationally defined as Receptive Vocabulary (RV) and Expressive Vocabulary (EV). Preschool student Receptive Vocabulary was assessed pre- and post-intervention using the PPVT-4. Preschool student Expressive Vocabulary was assessed pre- and post-intervention using the EVT-2. Expressive Vocabulary was further operationally defined as expressive language development, and was assessed using the Individual Growth and Development Indicator (IGDI): Picture Naming (PN).

Procedures

Informed Consent

Approval from the Duquesne University Institutional Review Board (IRB) was obtained prior to beginning the investigation. After IRB approval was obtained, a letter of inquiry and executive summary was sent to the director of the early learning center

asking for permission to send recruitment letters home, use the facility for parent training, and use class time and facility space for student progress monitoring and evaluation. All procedures of the current study were presented to the early learning center director by the researcher.

Once permission from the center director was obtained, preschool teachers and staff members of the Early Learning Center (ELC) were informed of study-related procedures. Each participant's rights were protected throughout the study and he or she had the right to withdraw at any time. The researcher has an ethical responsibility to maintain confidentiality at all times and share findings with participant caregivers. ELC staff made available detailed parental consent forms to caregivers of students who were four or five years of age.

All caregivers who reported an interest in participating to the ELC staff were able to meet with the researcher prior to providing informed consent. During these 'in person' meetings, the researcher verbalized the intent of the study, permission form, and directions, thus eliminating potential barriers posed by limitations in caregivers' literacy skills. The researcher answered any questions pertaining to the permission form, and then collected completed permission forms. Children provided assent verbally due to age. Participation in the study required consent and all potential participants received information about the nature of the research, the risks, the potential benefits, and their rights as a research subject in a language and at a level they can understand before signing the informed consent document. Based upon receipt of signed consent forms, six children were able to participate in the current study.

Parent Training

Caregivers received individual training with the researcher utilizing the videotape for the *Read Together, Talk Together* program (RTTT; Pearson Early Learning, 2002). Each training session was conducted at the ELC site. According to research conducted by Huebner and Meltzoff (2005), caregivers reported a substantial preference for in-person instruction with training videos compared to self-instruction with training videos alone. Furthermore, stratification of data by parental education suggested in-person instruction using training videos is the more effective format, especially for parents with only high school education (Huebner & Meltzoff, 2005). Therefore, each caregiver received an in-person training session that included the use of the RTTT training video (Pearson Early Learning, 2002).

During the individual training sessions, the instructor provided a brief introduction about the importance of reading to young children, followed by presentation of the RTTT training video, which is 20 minutes in length (Pearson, 2002). Caregivers were then given the opportunity to practice utilizing dialogical reading techniques with the investigator in a role-play scenario and received corrective feedback from the instructor. Training sessions did not exceed one hour in length. At the conclusion of the training session, caregivers received a refrigerator reminder sheet that was magnetized and laminated, which summarized critical information presented in the training video. Caregivers also received bookmarks developed to facilitate the use of dialogic reading techniques. Blom-Hoffman, O'Neil-Pirozzi, and Cutting (2006) utilized this post-training procedure and obtained high parent acceptability ratings and results suggesting parents held positive views about the program. Furthermore, participants in the current study received six picture books at the conclusion of training to ensure adequate access to

reading material over the course of the intervention period. All parents were instructed to use the picture books in the same sequence and all books were numbered accordingly.

Dialogic reading techniques involve standard educational practices. Parents utilizing these techniques read picture books to their children while providing questioning prompts (e.g., who, what, where, when, why questions), vocabulary prompts, and engaging in active listening. Caregivers were directed to implement dialogic reading strategies within their homes when reading with their children a minimum of three times per week for fifteen minutes per session over a six-week period. A note was placed inside the front cover of each book reminding caregivers to read the book three times. Three boxes were placed on the note and caregivers were instructed to use this note as a reminder by placing a checkmark in each box after reading with their child.

Baseline

Baseline data collection lasted 3 weeks for Child A and Child B, 6 weeks for Child C, 7 weeks for Child D, and 9 weeks for Child E, consistent with a multiple baseline across participants design. Weekly data collection using PN was conducted across all participants. Pre-testing was conducted the week prior to implementation of the intervention condition. Pre-test measures of expressive and receptive vocabulary were completed using Form A of the EVT-2 and PPVT-4, respectively. During the last week of baseline for each participant, caregiver training, as described above, was implemented.

Intervention

The intervention condition lasted 6 weeks for each participant. As specified during individual training sessions, caregivers were directed to implement dialogic reading strategies within their homes when reading with their children a minimum of

three times per week for fifteen minutes per session over the six-week period. Weekly data collection using PN was conducted across all participants.

Progress Monitoring

Participants received weekly progress monitoring after completion of the intervention condition using PN. Post-testing was completed across all participants the week after the intervention condition concluded. Post-test expressive and receptive vocabulary measures were completed using Form B of the EVT-2 and PPVT-4. As such, the entire period of the study across five participants spanned 16 weeks.

Data Analysis

Research Question 1

Does the inclusion of home-based dialogic reading support result in greater expressive vocabulary skills for high-risk children than participation in a preschool program alone?

Hypothesis 1. High-risk children who receive home-based dialogic reading support will demonstrate greater expressive vocabulary skills than participation in a preschool program alone.

Research Question 2

Does the inclusion of home-based dialogic reading support result in greater receptive vocabulary skills for high-risk children than participation in a preschool program alone?

Hypothesis 2. High-risk children who receive home-based dialogic reading support will demonstrate greater receptive vocabulary skills than participation in a preschool program alone.

Visual Analysis of Graphic Data

Multiple baseline design across participants, a single subject research design, was used to investigate the aforementioned research questions. Visual analysis of graphic data has been identified as a practical and reliable approach in applied research using single subject design (Gast & Spriggs, 2010). Therefore, consistent with data analysis recommendations for this type of single subject research, visual analysis of graphic data was employed. Specifically, visual analysis of graphic data within conditions and between adjacent conditions was utilized in the present investigation.

Visual analysis of graphic data within conditions. Within condition analysis included examination of condition length, level, and trend across the baseline, intervention, and progress monitoring conditions for all participants. Condition length, the length each condition was in effect, was analyzed first by counting the number of data points plotted within each condition (Gast & Spriggs, 2010). Next, condition level was analyzed in terms of level stability and level change. The variability of the data level, or level stability, was analyzed by examining the percentage of data points falling within 25% of the median value (i.e., within the ‘stability envelope’), with the stability criterion set at 80%. Level stability was also analyzed using the range in data point values. Relative level change, identified as “more representative” of level change within a condition, was calculated by obtaining the median value of the first half of the data series and the median value of the second half of the data series, then subtracting the smaller value from the larger value (Gast & Spriggs, 2010, p. 204).

Last, the trend direction and stability of each condition was analyzed by visually inspecting the trend line (slope) generated graphically using Microsoft Office Excel 2007.

Gast and Spriggs (2010) reported the following three trend directions: accelerating or increasing in ordinate value over time, decelerating or decreasing in ordinate value over time, and zero celerating, wherein the data series is parallel to the x-axis. Whether the direction of the trend was improving or deteriorating relative to the objectives of the study (i.e. improved early literacy skills) was also reported.

Visual analysis of graphic data between conditions. The objective of analyzing data between adjacent conditions (e.g., from baseline to intervention conditions) is to determine the effect, if any, a change in condition has on the dependent variable (Gast & Spriggs, 2010). During analysis of the change between conditions, primarily the change from baseline to intervention, three criteria were used by the experimenter: changes in trend (direction and stability), changes in level (magnitude and stability), and percentage of non-overlapping data (PND), as reported by Gast and Spriggs (2010).

Examining adjacent conditions for changes in trend direction is a critical visual analysis determination, as asserted by Gast and Spriggs (2010). Changes in trend between adjacent conditions was analyzed by visually inspecting the trend lines of each condition generated graphically using Microsoft Office Excel 2007. Changes in trends were reported in terms of changes in trend direction, as discussed above, and whether these changes were an improvement or deterioration based on investigation objectives.

With regard to changes in level, the absolute and relative level changes were calculated by obtaining the difference in actual and median values, respectively, for each participant at the transition between conditions. Examination of the absolute level change between conditions allowed for examination of the strength and/or impact of the intervention on the dependent variable. As reported by Gast & Spriggs (2010), when a

‘large change in level’ occurs immediately after introduction of a new condition, level change is frequently referred to as an ‘abrupt’ change in level, which is indicative of an immediately ‘powerful’ or immediately effective intervention (pp. 213-214).

The final between-condition data analysis criterion employed by the investigator was the percentage of non-overlapping data point values (PND). PND was calculated using the mathematical procedure reported by Gast and Spriggs (2010). The researchers reported that the higher the PND, the greater the impact of the intervention on the target behavior, in general. Therefore, less overlap in data is more desirable and indicates a more reliable intervention.

Chapter 4: Results

Visual Analysis of Data for Research Question 1

Research Question 1

Does the inclusion of home-based dialogic reading support result in greater expressive vocabulary skills for high-risk children than participation in a preschool program alone?

Hypothesis 1. High-risk children who receive home-based dialogic reading support will demonstrate greater expressive vocabulary skills than participation in a preschool program alone.

Three conditions were employed during the study: baseline, intervention, and progress monitoring. After three baseline data points were collected for all participants, the intervention was immediately applied to the first participant group: Child A and Child B. The intervention was applied to the second participant group, Child C and Child D, after 5 and 7 baseline data points were collected, respectively. The intervention was applied to the final participant group, Child E, after 9 baseline data points were collected. Figure 1 displays the correct number of Picture Naming responses per minute that each participant exhibited during the baseline, intervention, and progress monitoring conditions evaluated within the context of a multiple baseline across participants design.

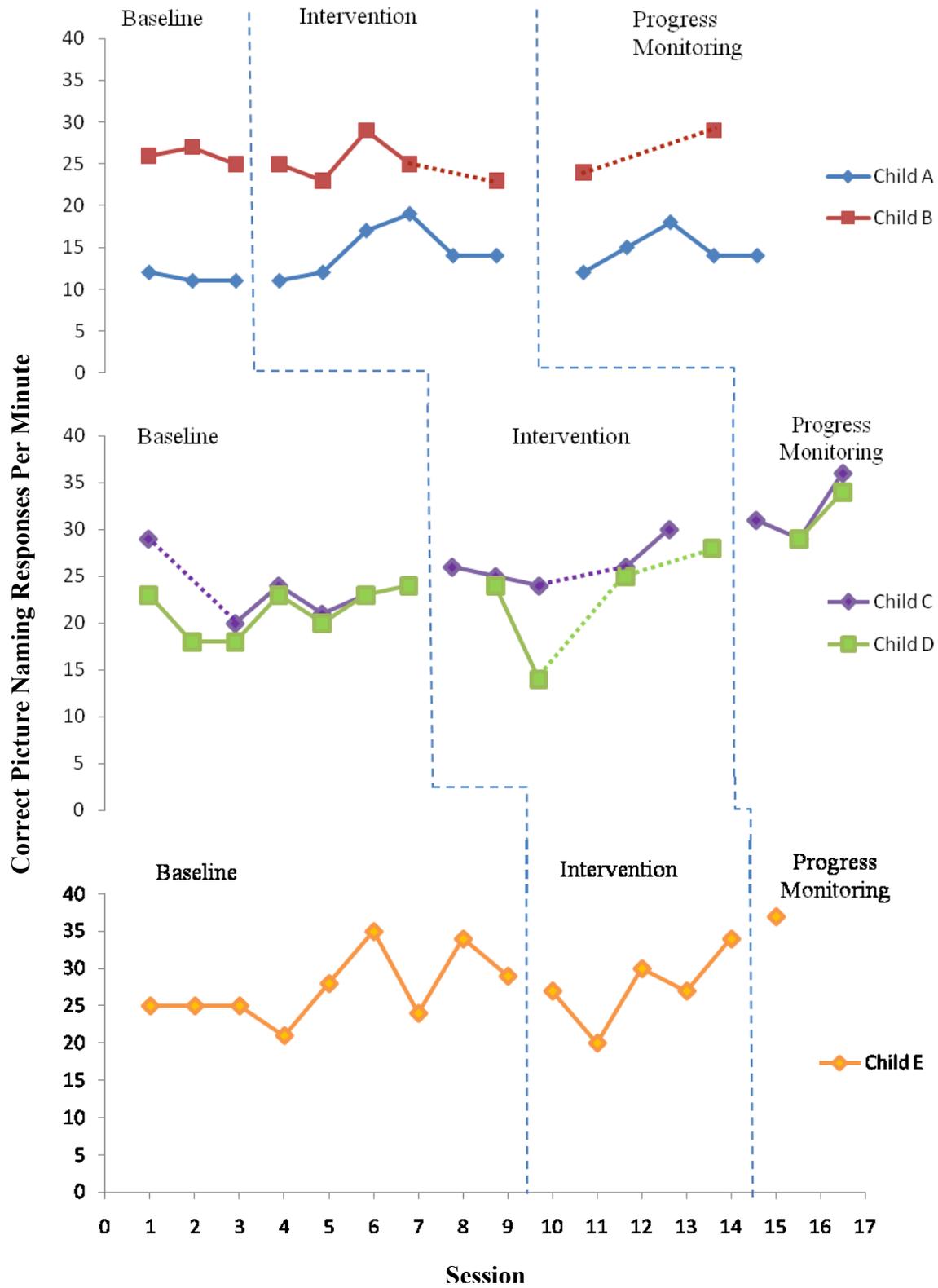


Figure 1: Correct number of Picture Naming responses per minute as a function of session over baseline, intervention, and progress monitoring phases. Discontinuous session data in each phase are represented in the figure by dashed lines.

Child A

Baseline condition. The baseline condition spanned 3 sessions. The level of the data was stable throughout baseline, with 100% of data points falling within 25% of the median value ($Mdn = 11$) and a range value of 1. A relative level change of -1, deteriorating, was obtained which provides further support for the stability of the data. Upon visual inspection of the trend line for direction and stability, data presented with zero celeration and were stable (see Figure 2).

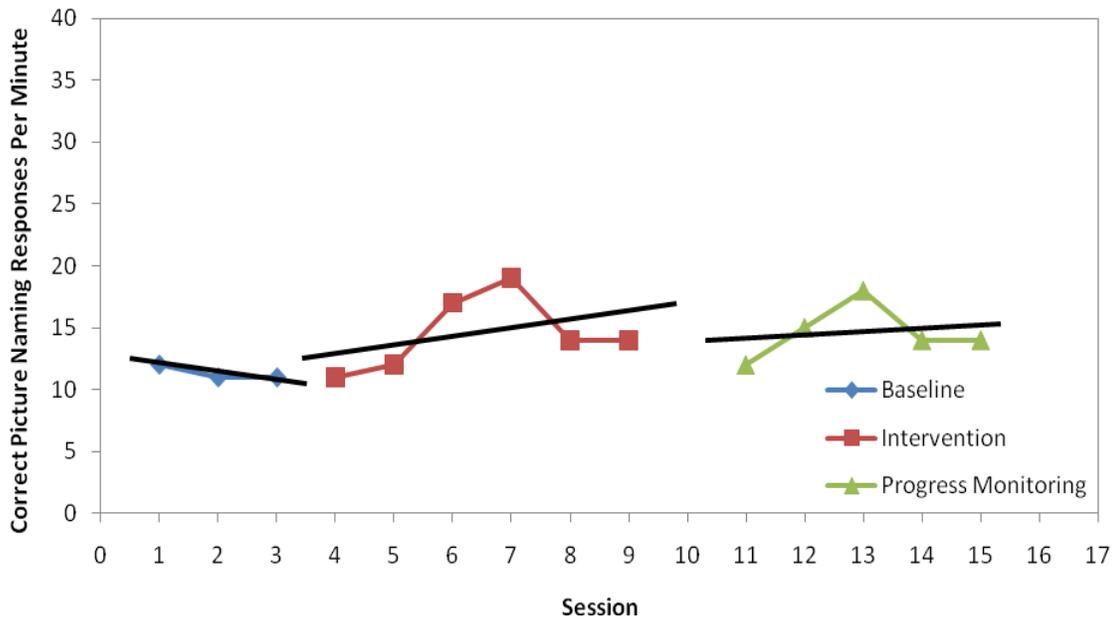


Figure 2. Correct Picture Naming responses per minute exhibited by Child A during baseline, intervention, and progress monitoring conditions with trend lines generated graphically using Microsoft Office Excel 2007.

Intervention condition. The intervention condition spanned 6 sessions. Level stability was variable throughout intervention, with 66% of data points falling within 25% of the median value ($Mdn = 14$). This falls below the stability criterion of 80%. Furthermore, a range value of 8 was obtained. Relative level change in the intervention

condition was calculated at +2, improving, indicating a modest change in level. A fairly stable accelerating trend in data was observed, which indicates improvement relative to the objectives of the investigation (see Figure 2).

Changes between baseline condition to intervention condition. Assuming all other variables were constant across conditions, the primary variable that changed was the introduction of the caregiver dialogic reading training variable in the intervention condition. A positive change in trend direction, given the objectives of the investigation, was evidenced (see Figure 2). A stable, zero celerating trend in baseline changed after the introduction of the intervention to an accelerating-improving trend in the intervention condition, though data did become variable. Relative and absolute level change between baseline and intervention yielded values of -1 and 0, respectively, indicating no immediate change with the introduction of the intervention. Median level change (+3, improving) and mean level change (+4, improving) indicated a positive change occurred overall, but no abrupt change occurred immediately after introducing the dialogic reading intervention.

Calculating the percentage of non-overlapping data (PND) indicated 67% of the responses in the intervention condition exceeded the highest correct response obtained during the baseline condition.

Progress monitoring. The progress monitoring condition spanned 5 sessions. The accelerating-improving trend exhibited during intervention was initially maintained for the first three weeks of progress monitoring, but a decline during the final two weeks of this condition resulted in a zero celerating trend overall (see Figure 2). Data were stable.

Child B

Baseline condition. The baseline condition spanned three sessions. Data were stable throughout baseline, with 100% of data points falling within 25% of the median value ($Mdn = 26$) and a range value of 2. A relative level change of -1, deteriorating, was obtained which provides further support for the stability of the data. Upon visual inspection of the trend line for direction and stability, data presented with zero celeration and were stable (see Figure 3).

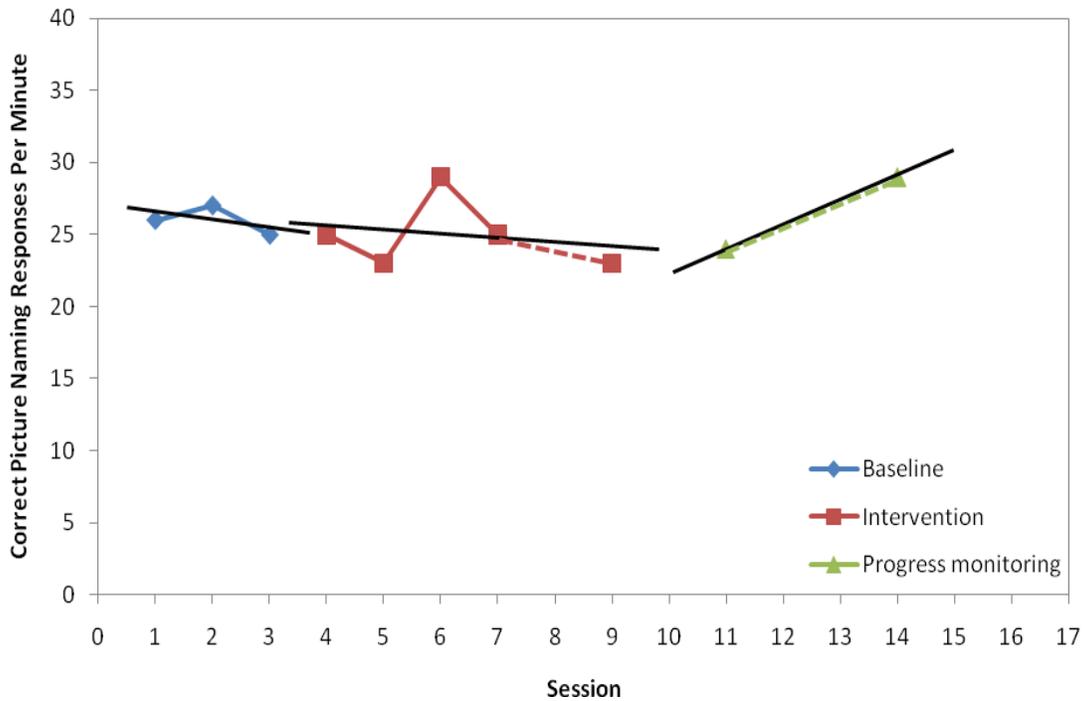


Figure 3. Correct Picture Naming responses per minute exhibited by Child B during baseline, intervention, and progress monitoring conditions with trend lines generated graphically using Microsoft Office Excel 2007.

Intervention condition. The intervention condition spanned 5 sessions (1 session missed due to participant absence). Data were stable throughout the intervention condition, with 100% of data points falling within 25% of the median value ($Mdn = 25$)

and a range value of 6. A relative level change of 0 was obtained which provides further support for the stability of the data. Upon visual inspection of the trend line for direction and stability, data presented with zero celeration and were stable (see Figure 3).

Changes between baseline condition to intervention condition. Assuming all other variables were constant across conditions, the primary variable that changed was the introduction of the caregiver dialogic reading training variable in the intervention condition. No change in trend direction, given the objectives of the investigation, was evidenced (see Figure 3). A stable, zero celerating trend in baseline was maintained in the intervention condition. Relative and absolute level change between baseline and intervention yielded values of -1 and 0, respectively, indicating no immediate change with the introduction of the intervention. Median level change (-1, deteriorating) and mean level change (-1, deteriorating) indicated no substantial change after introduction of the dialogic reading interventions. Furthermore, calculation of the percentage of non-overlapping data (PND) indicated 20% of the responses in the intervention condition exceeded the highest correct response obtained during the baseline condition.

Progress monitoring. The progress monitoring condition spanned two sessions. Data presented with a stable, accelerating-improving trend relative to the objectives of the investigation (see Figure 3).

Child C

Baseline condition. The baseline condition spanned 5 sessions. Data were fairly stable during baseline, as per 80% of data points falling within 25% of the median value ($Mdn = 23$) and a range value of 9. A relative level change of -3, deteriorating, was obtained. Upon visual inspection of the trend line for direction and stability, data

presented with a decelerating trend and were fairly stable, with one outlying data point (see Figure 4).

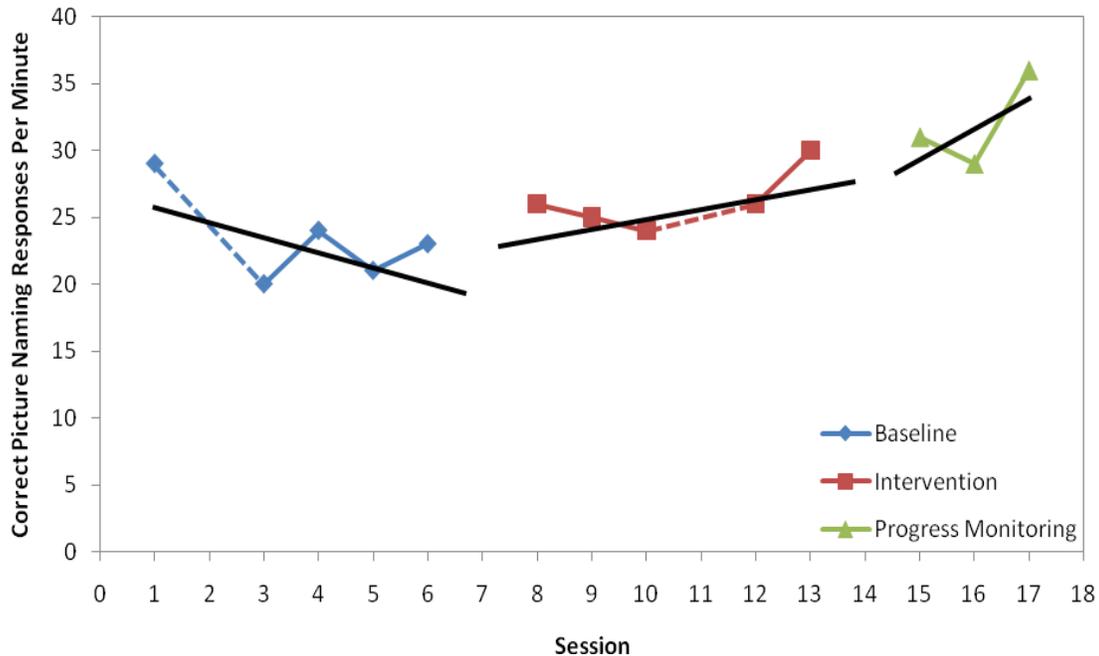


Figure 4. Correct Picture Naming responses per minute exhibited by Child C during baseline, intervention, and progress monitoring conditions with trend lines generated graphically using Microsoft Office Excel 2007.

Intervention condition. The intervention condition spanned 5 sessions. Data were stable throughout intervention, with 100% of data points falling within 25% of the median value ($Mdn = 26$). A relative level change of +2, improving, was obtained. Upon visual inspection of the trend line for direction and stability, data presented with a pattern of mild acceleration, consistent with relative level change reported above, and were stable (see Figure 4).

Changes between baseline condition to intervention condition. Assuming all other variables were constant across conditions, the primary variable that changed was

the introduction of the caregiver dialogic reading training variable in the intervention condition. A positive change in trend direction, given the objectives of the investigation, was evidenced. A stable, decelerating trend in baseline changed to a stable, accelerating-improving trend in the intervention condition after the introduction of the dialogic reading training (see Figure 4). Relative and absolute level change between baseline and intervention yielded values of +3 improving and +4 improving, respectively, indicating change with the introduction of the intervention. Median level change (+3, improving) and mean level change (+3, improving) indicated a positive change occurred overall, but no abrupt change occurred immediately after introducing the dialogic reading interventions.

Calculating the percentage of non-overlapping data (PND) indicated 20% of the responses in the intervention condition exceeded the highest correct response obtained during the baseline condition.

Progress monitoring. The progress monitoring condition spanned 3 sessions. The stable, accelerating-improving trend demonstrated in the intervention condition was maintained throughout the progress monitoring condition (see Figure 4). Calculating the percentage of non-overlapping data (PND) indicated 67% of the responses in the progress monitoring condition exceeded the highest correct response obtained during the intervention condition.

Child D

Baseline condition. The baseline condition spanned 7 sessions. Data were stable during baseline, with 100% of data points falling within 25% of the median value ($Mdn = 23$) and a range value of 6. A relative level change of +5, improving, was obtained. Upon

visual inspection of the trend line for direction and stability, data presented with an accelerating trend and were stable (see Figure 5).

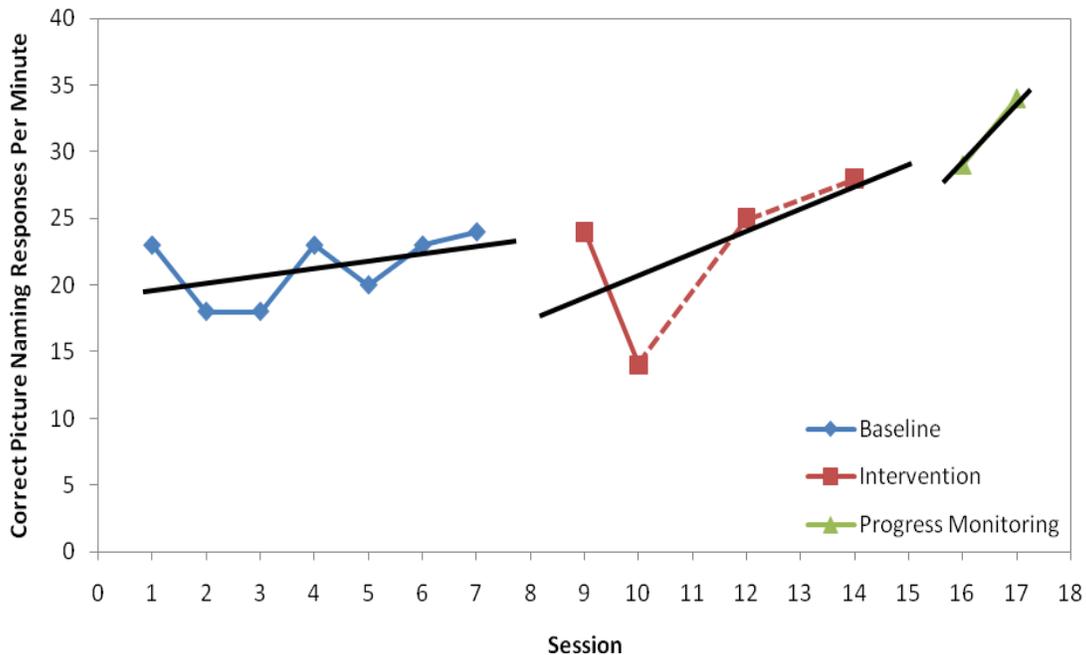


Figure 5. Correct Picture Naming responses per minute exhibited by Child D during baseline, intervention, and progress monitoring conditions with trend lines generated graphically using Microsoft Office Excel 2007.

Intervention condition. The intervention condition spanned 4 sessions (missing data due to student absences). Data were variable throughout intervention, with 75% of data points falling within 25% of the median value ($Mdn = 25$). This falls below the stability criterion of 80%. Furthermore, the range during the intervention condition was 14. A relative level change of +8, improving, was obtained. Upon visual inspection of the trend line for direction and stability, data trended in an accelerating direction, consistent with relative level change reported above. Data demonstrated improvement given the objectives of the investigation (see Figure 5). However, data were variable, primarily due to an outlying data point.

Changes between baseline condition to intervention condition. Assuming all other variables were constant across conditions, the primary variable that changed was the introduction of the caregiver dialogic reading training variable in the intervention condition. No change in trend direction was evidenced. Data exhibited a stable, accelerating trend during baseline and became variable after the introduction of the intervention (see Figure 5). Relative and absolute level change between baseline and intervention yielded values of -4, deteriorating, and 0, respectively. No immediate change occurred with the introduction of the intervention. Median level change (+2, improving) and mean level change (+2, improving) suggest positive change occurred overall, but no abrupt change occurred immediately after introducing the dialogic reading intervention. Data were already exhibiting this presentation in baseline.

Calculating the percentage of non-overlapping data (PND) indicated 50% of the responses in the intervention condition exceeded the highest correct response obtained during the baseline condition.

Progress monitoring. The progress monitoring condition spanned 2 sessions. Calculating the percentage of non-overlapping data (PND) indicated 100% of the responses in the progress monitoring condition exceeded the highest correct response obtained during the intervention condition. Data maintained an accelerating-improving trend (see Figure 5).

Child E

Baseline condition. The baseline condition spanned 9 sessions. Data were variable during baseline. Sixty-seven percent of data points fell within 25% of the median value ($Mdn = 25$), which is below the stability criterion of 80%. A range value of 14 and

a relative level change of +4, improving, were obtained. Upon visual inspection of the trend line for direction and stability, data presented with an accelerating trend and were variable (see Figure 6).

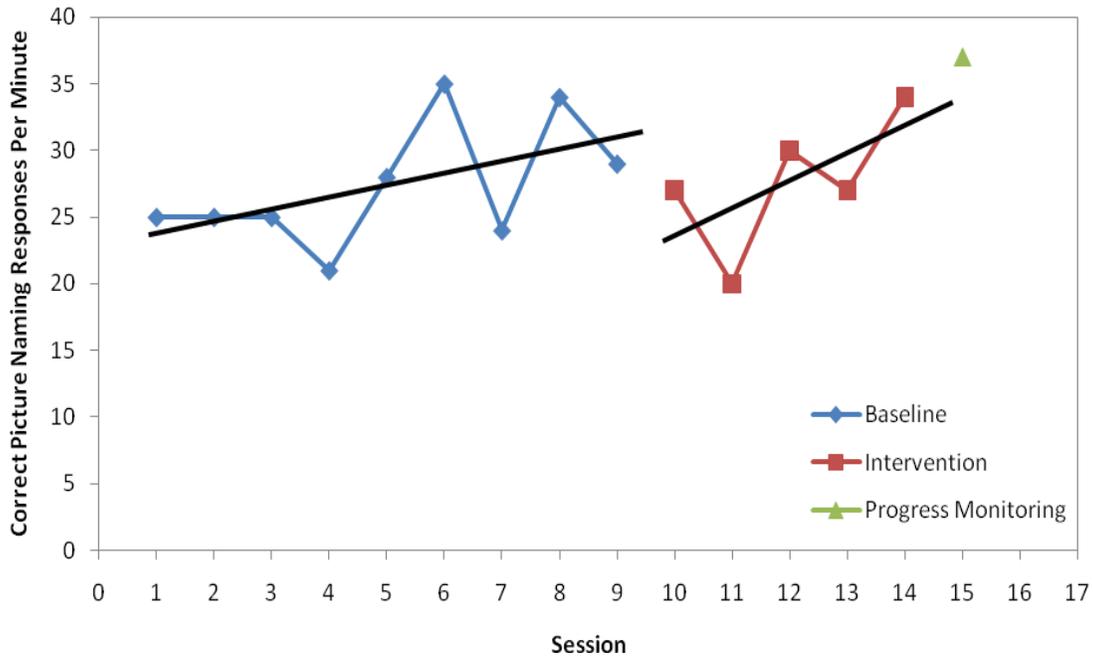


Figure 6. Correct Picture Naming responses per minute exhibited by Child E during baseline, intervention, and progress monitoring conditions with trend lines generated graphically using Microsoft Office Excel 2007.

Intervention condition. The intervention condition spanned 5 sessions. Data were stable throughout intervention, evidenced by 80% of data points falling within 25% of the median ($Mdn = 27$). A relative level change of +7, improving was obtained. Upon visual inspection of the trend line for direction and stability, data trended in an accelerating direction, consistent with relative level change reported above and demonstrated improvement given the objectives of the investigation (see Figure 6). Data presented somewhat variable.

Changes between baseline condition to intervention condition. Assuming all other variables were constant across conditions, the primary variable that changed was the introduction of the caregiver dialogic reading training variable in the intervention condition. No change in trend direction, given the objectives of the investigation, was evidenced. A variable, accelerating trend in baseline was maintained after the introduction of the intervention. Data exhibited a variable, accelerating trend in the intervention condition (see Figure 6). Relative and absolute level change between baseline and intervention yielded values of -5 deteriorating and -2 deteriorating, respectively. No immediate change occurred with the introduction of the intervention. Median level change (+2, improving) and mean level change (+1, improving) indicated a positive change occurred overall, but no abrupt change occurred immediately after introducing the dialogic reading interventions.

Calculating the percentage of non-overlapping data (PND) indicated 0% of the responses in the intervention condition exceeded the highest correct response obtained during the baseline condition.

Progress monitoring. Progress monitoring spanned one session. The one data point available exceeded the highest correct response obtained during the intervention condition, suggesting maintenance of an accelerating-improving trend.

Analysis of Anecdotal Data for Research Question 2

Research Question 2

Does the inclusion of home-based dialogic reading support result in greater receptive vocabulary skills for high-risk children than participation in best-practice instruction at an early learning center alone?

Hypothesis 2. High-risk children who receive home-based dialogic reading support will demonstrate greater receptive vocabulary skills than participation in best-practice instruction at an early learning center alone.

Given that there were five participants in this single subject design, sample size is insufficient to employ inferential statistics. With that interpretative limitation recognized, PPVT-4 data, a measure of receptive vocabulary, and EVT-2 data, a measure of expressive vocabulary, present in a manner consistent with PN data as shown in Table 1.

Table 1

Pre-test and Post-test Receptive and Expressive Vocabulary Skills across Participants

Participant	PPVT-4		EVT-2	
	Pre-Test	Post-Test	Pre-Test	Post-Test
Child A	88	85	88	88
Child B	98	114	113	110
Child C	98	109	99	107
Child D	104	105	99	97
Child E	93	108	91	93

Note. Form A for each measure was administered as pre-test. Form B for each measure was administered as post-test.

EVT-2 data were indicative of stable performance across all participants. In general, participant performance pre- and post-intervention implementation does not indicate significant positive growth in receptive or expressive vocabulary. Expressively, participant scores remain within the same descriptive classification range, with the

exception of Child C, whose pre-intervention standard score falls one point below the descriptive classification range of her post-intervention standard score.

However, anecdotal examination of PPVT-4 standard scores on pre-test compared to post-test suggests receptive vocabulary growth was most apparent in Child C and Child E. In these two participants, performance increased from Low Average to High Average. Furthermore, the post-intervention scores on Form B exceeded the 95% confidence interval established on the pre-intervention Form A. Overall, consistent with analysis of the PN data, PPVT-4 data were fairly stable over time.

Chapter 5: Discussion

The importance of developing adequate reading ability cannot be understated. In fact, demonstrating competent reading skills has been described as, “perhaps the single most important skill a child can acquire” (Primavera, 2000, p. 86). Reading is at the foundation of most other subjects taught in school as well as most of the activities in which one engages after formal education has been completed (Daly et al., 2005). Despite the well-known nature of the ramifications of unsuccessful reading development, it remains a functional skills problem experienced by many.

The various factors contributing to the process of reading development, including pathways leading to fluent reading and risk factors associated with poor reading, have been studied extensively (Senechal & LeFevre, 2002). Socioeconomic status (SES) is arguably one of the most pervasive influences on a child’s development, and low-SES can negatively influence all developmental processes, including reading (Bradley & Corwyn, 2002; Hecht, Burgess, Torgesen, Wagner, & Rashotte, 2000; Lonigan, Burgess, Anthony, & Barker, 1998). Research examining the process of reading development within this at-risk population has provided researchers and educators with a better understanding of protective factors related to typical reading development.

Parent support is a highly influential factor within the SES-reading development relationship. Specifically, parental involvement has been identified as a primary factor in supporting low-SES reading development (Shaver & Walls, 1998; Raffaele & Knoff, 1999). In addition to school involvement, research conducted by Rush (1999), Dodici et al. (2000), Hockenberger et al. (2000), Huebner (2000a), and Primavera (2000) provide insight into the role of parents and specific home-based literacy activities on the

development of adequate reading skills in children with low-SES. These studies stress the importance of supportive parents. The researchers concluded that a variety of intervention programs teaching parents how to foster reading development within the home can positively influence the reading development of an especially at-risk population (Dodici et al., 2000; Hockenberger et al., 2000; Huebner, 2000a; Primavera, 2000; Rush, 1999).

Research has suggested two major findings of importance for this study: 1) parental support through involvement with school and 2) parental support through parent-child interaction and shared reading activities foster successful reading development in populations of children with low-SES. A home-based dialogic reading program is capable of incorporating elements from both of these findings. Specifically, school involvement can be provided through preschool-based technique training and fidelity monitoring. In addition, the core feature of dialogic reading involves improved shared reading activities within the home environment, thus fostering home-based parental support to supplement instruction received in the school environment.

Dialogic reading is an empirically based intervention designed to foster language and literacy skills in young children. Numerous research studies have examined its efficacy and impact on developing learners as well as the various training methods that can be employed (e.g., Arnold et al., 1994; Blom-Hoffman et al., 2006a; Blom-Hoffman et al., 2006b; Huebner, 2000a; Huebner, 2000b; Huebner & Meltzoff, 2005; Whitehurst & Epstein, 1994; Whitehurst et al, 1988). Overall, dialogic reading is an evidence-based reading intervention that has been found effective for use with populations of young children experiencing low-SES (Huebner, 2000a). In addition, videotape training provided in-person has been found to yield successful outcomes, especially for parents

with modest levels of formal education (Huebner & Meltzoff, 2005). However, additional research examining the benefits of using dialogic reading techniques with older preschoolers in at-risk environments after caregivers receive videotape training is needed (Mol et al., 2008).

Summary of Results

The present study extends previous research in a variety of ways. As the research summarized above suggests, the role of parental support in low-SES households remains an area in need of additional exploration. A particular topic to be explored is the additive effect of parental dialogic reading techniques to supplement classroom instruction. The current study examined the additive effect of parental dialogic reading techniques in older preschool children with low-SES. Examining the interaction between parental support in the home and support in preschool provided an important step toward refining the needs of developing readers within low-SES populations.

In general, the results of the study provide neither outright support for the hypotheses of this investigation, nor lead to the rejection of the hypotheses, either. Children who received the dialogic reading parent intervention demonstrated greater attainment of receptive and expressive language skills; however, gains beyond those experienced by maturation effects could not be established. Overall results suggest skill growth across all participants, with the exception of the first child. No immediate change occurred with the introduction of the intervention. Therefore, positive change occurred overall, but no abrupt change occurred immediately after introducing the dialogic reading intervention.

The parent training methods employed and the student population represented in the present study also extended previous research. The present study utilized videotape parent training with caregivers of older preschoolers with low-SES, a population that was studied less extensively than other groups of students. Furthermore, the focus on attaining mastery of ‘fundamental’ skills learned early in reading development, a central tenet of current early literacy instruction theory, strengthens the argument that early intervention is an appropriate and necessary course of action to bring about positive change within this population (Christie, 2008).

Summary of Research Questions

The first research question examined the impact of home-based dialogic reading support on expressive vocabulary skills for economically at-risk preschoolers. It was hypothesized that children who received home-based dialogic reading support would demonstrate greater expressive vocabulary skills than participation in a preschool program alone. Although expressive vocabulary skill gains did occur across all participants, significant gains were not observed immediately after implementation of the dialogic reading intervention and overall gains did not exceed what may have occurred through student maturation.

The second research question examined the impact of home-based dialogic reading support on receptive vocabulary skills for economically at-risk preschoolers. It was hypothesized that children who received home-based dialogic reading support would demonstrate greater receptive vocabulary skills than participation in a preschool program alone. Although receptive vocabulary skill gains did occur across all participants, with the exception of Child A, significant gains were not observed immediately after

implementation of the dialogic reading intervention and overall gains did not exceed what may have occurred through student maturation.

Conclusions

Application of Findings to Relevant Theory

Results of this study provide support for the bioecological model developed by Bronfenbrenner (1979), particularly with regard to the importance of mesosystem-level variables on the developmental process. Bronfenbrenner's bioecological model addresses multiple factors that directly and indirectly influence a developmental process simultaneously. As a macrosystem-level factor, low-SES indirectly influences a child's reading development by having a direct negative impact on exosystem, mesosystem, and microsystem factors. Stressors stemming from inadequate financial resources may prevent a parent from becoming involved with the child's education, thus eliminating parental support at school (mesosystem), because the stressors necessitate need-prioritizing, with energy being expended on meeting the needs that are most immediate and essential.

Given the importance of mesosystem-level interrelations as discussed above, it is critical to examine the influence of early reading experiences within the home in addition to examining instruction provided within the school to fully understand the reading development process. Bronfenbrenner (2000) stressed the importance of reciprocal interaction between the developing child and persons, objects, and symbols in that child's immediate environment, which he labeled "proximal processes." Bronfenbrenner (2000) asserted proximal processes are, "the primary engines of development," and the developmental impact of these processes increase when they occur between individuals

with a strong emotional attachment (p. 130). A parent interacting with his or her child in the home through language-based activities is an example of a proximal process, which makes parental support at home a “primary engine” for reading development.

In the current study, parents engaged in proximal processes by utilizing dialogic reading techniques within the home setting multiple times per week. By implementing dialogic reading techniques as well as maintaining all other developmentally-appropriate parent-child interactions, all children evidenced receptive (except Child A) and expressive skill gains during the course of the investigation. This study found that maintenance of proximal processes in the home environment can benefit the development of early reading skills, even in populations of students characterized by economic risk. Although these gains cannot be attributed completely to the implementation of dialogic reading techniques in the home, the use of parent-child proximal processes in addition to exposure to instruction in preschool resulted in receptive and expressive language skill gains. The importance of caregiver-child proximal processes is further highlighted by the fact that all preschool students receive the same instruction at school but substantially different levels of support at home. Given the fact that student outcomes differ dramatically, it is likely that the role played by parents’ proximal processes, including dialogic reading techniques, is substantial.

Application of Findings to the Existing Literature

Dialogic reading research. Findings from this study are consistent with previous research in some regards and divergent in others. For example, although significant results were not obtained in the current study, language development was appreciable in four of five participants. Appreciable language development is consistent with the

seminal research conducted by Whitehurst et al. (1988). In addition, results from the current study are consistent with research conducted by Huebner (2000b). Although research conducted by Huebner differed with regard to methodology (e.g., parents of toddlers were trained in community settings) the researcher attributed lack of significant gains on measures of vocabulary development to children's baseline skill levels. All of the children were talkative and using three to four-word sentences, suggesting average to above-average baseline skill consistent with the pretest measures of expressive and receptive vocabulary for the participants in the current study.

Research conducted by Huebner (2000b) supported the argument that shared reading benefits children at greater risk of developing poor reading skills. Results indicated that the frequency of home reading and child's reading enjoyment increased. Also, reading in the question-answer style most typically used in schools became more common within the home. The current study attempted to further this line of research to examine whether these results can be obtained in older populations of similarly at-risk children, and whether this intervention would promote language skill development in a meaningful way. Results from the current study do not indicate significant, meaningful growth in expressive or receptive skill; however, parent perception of the intervention presents as generally positive based on anecdotal positive remarks made by parents provided during parent fidelity "check-ins."

Results of this study are consistent with several outcomes of the meta-analysis conducted by Mol et al. (2008). Specifically, Mol et al. determined that dialogic reading was less meaningful with regard to expressive vocabulary gains for older children and those at risk for language and literacy impairments. Researchers postulated that this may

be due to parents experiencing difficulty adapting dialogic reading techniques for use with older children, who may also prefer to hear stories uninterrupted. Results from the meta-analysis also found that groups at risk for language and literacy impairments received less benefit from dialogic reading than those not at risk (Mol et al., 2008). This lack of meaningful gain may be due to parental level of education effecting dialogic reading implementation as well as intervention demands (e.g., making inferences) beyond the present level of at-risk children. Of note to the current study, Mol et al. hypothesized that dialogic reading might be more effective with older low-SES children who have more advanced language skills relative to younger children with low-SES. This hypothesis was investigated in the current study; however, additional research examining whether older children at-risk receive greater benefit from dialogic reading than younger children at-risk continues to be needed.

Training. Results of this study are convergent with current research examining dialogic reading parent training methodology. Several studies have been conducted to examine the effectiveness and acceptability of various dialogic reading training models since the inception of this intervention. Methods employed include: 1) one-on-one adult reader training, 2) training multiple adult readers simultaneously in a group format, and 3) training groups of adult readers with an instructional video paired with or without supplemental training (Arnold et al., 1994; Blom-Hoffman, O’Neil-Pirozzi, & Cutting, 2006; Blom-Hoffman, O’Neil-Pirozzi, Volpe, Cutting, & Bissinger, 2006; Huebner & Meltzoff, 2005).

In the seminal research study conducted on dialogic reading, mothers served as the adult readers and received two 30 minute training sessions two weeks apart

(Whitehurst et al., 1988). Video-based training was later found to be a more effective training method compared to traditional training for implementing a dialogic reading program in terms of cost and student outcome (Arnold et al., 1994). Research applying the use of video training to caregivers during routine visits to community health centers has yielded positive findings in terms of parent acceptability and child gains (Blom-Hoffman, O'Neil-Pirozzi, & Cutting, 2006; Blom-Hoffman, O'Neil-Pirozzi, Volpe, et al., 2006). In addition, substantial preference for in-person instruction over self-instruction was suggested and stratification of data by parental education suggests in-person instruction is the more effective format, especially for parents with only high school education (Huebner & Meltzoff, 2005). Follow-up analysis found that the brief dialogic reading training used by Huebner and Meltzoff (2005) lead to lasting changes in parents' reading style (Huebner & Payne, 2010).

Consistent with the current study, Briesch et al. (2008) used a small sample of caregivers ($n = 6$) to investigate the integrity of using dialogic reading techniques with preschoolers after caregivers viewed a commercially available training video: *Read Together, Talk Together* (RTTT; Pearson Early Learning, 2002). The researchers concluded that caregivers effectively learned to use several dialogic reading techniques when reading with their preschool-age children after receiving video-based training, but supplemental training may be necessary to ensure certain strategies are implemented with integrity. Overall, results provide strong support for the ability to create lasting change in parents' reading style through brief instructional training using video format.

Limitations

Primary limitations of the current study include the pre-intervention skill level of all child participants as well as the potential for self-selection bias. Although participation in the study was made available to all caregivers of children in the preschool classroom, only six caregivers expressed interest, five of whom participated for the duration of the investigation. The caregivers who volunteered to participate were already motivated to read with their children; therefore, there may be characteristics that set this sample of economically at-risk parents aside from the general population of caregivers.

For example, the children whose caregivers participated demonstrated average expressive and receptive vocabulary skills at baseline. It is reasonable to hypothesize that the caregivers who took it upon themselves to participate in an academic intervention may have already engaged in a variety of activities at home to promote successful reading development. They may have also been highly involved in their children's preschool. Therefore, the benefits of this intervention may have not exceeded the gains occurring through typical reader maturation because these children did not present at an initial deficit. Future research investigating the benefits of dialogic reading with this population should examine the potential effects of caregiver-school involvement and caregivers' use of reading strategies in the home by seeking out information about these variables from caregivers prior to implementing dialogic reading technique training.

The findings of the current study are also limited with regard to generalizability. Results were based on the analysis of data from five African American caregiver-child dyads who resided in an urban setting characterized by economic risk. The preschoolers were also of kindergarten transition age at the implementation of the intervention. Similar

results may not emerge with caregivers of different ethnicities or economic statuses or with populations of younger preschoolers.

A limitation with regard to methodology involves the length of baseline and progress-monitoring phases for some participants. Time constraints experienced at the end of the academic year limited the number of progress monitoring data-collection sessions that could be conducted. In addition, time limitations prevented the examiner from being able to extend baseline data collection for Child C and Child D in an effort to achieve stability prior to intervention implementation. Future researchers may wish to replicate the current study at the beginning of the academic year. Without having a finite number of weeks before summer vacation, researchers would be able to make sure baseline data for all participants is stable prior to implementing the intervention condition. Researchers would also be able to ensure adequate progress monitoring can be conducted for all participant groups.

Recommendations for Future Research

Future research examining the impact of implementing early intervention strategies for students who are at risk for unsuccessful reading development continues to be necessary. Specifically, examining the effectiveness of dialogic reading interventions with groups of older preschoolers who demonstrate below average receptive and expressive language skills remains an area in need of further investigation. The current study was unable to accomplish this objective because all students were within average ranges for their age prior to implementation of the intervention. Reaching students with below-average language skills in this age group might be accomplished through universal screening. In addition, effectively reaching the parents whose children are most at-risk for

reading failure is recommended. Early intervention could provide an effective means for addressing the pressing societal concern regarding unsuccessful reading development in low-SES populations.

Promoting literacy activities by providing parent training, such as a family literacy workshop, has been found to increase children's levels of school readiness skills and parents have reported experiencing substantial benefits from this type of program, including positive changes at the family-system level (Primavera, 2000). Future research examining caregiver approval of dialogic reading techniques used with older preschool students is needed. Examination of whether the use of dialogic reading techniques would result in positive change to the family system would be beneficial, particularly in high-risk populations.

This line of inquiry would also provide insight into whether parents believe dialogic reading is more difficult to use with older children than younger children (i.e., children 2-3 years of age). Increasing the complexity of adult questions and prompts as children's abilities change was identified as one of the dialogic reading hallmarks critical to effective implementation and successful outcomes (Whitehurst et al., 1988). Using dialogic reading techniques with older children to target more advanced skills may be difficult for parents, especially parents with modest educational attainment. Being able to implement appropriate techniques with this age group may require additional caregiver training. Determining whether modest educational attainment limits caregiver effectiveness in using these advanced techniques is needed.

Furthermore, additional research is necessary to explore the effectiveness of dialogic reading techniques as a function of familial economic status. Would children

experiencing less economic risk present with advanced skills that would allow them to benefit from a dialogic reading intervention, our would their economically at-risk peers experience greater receptive and expressive language gains? Similarly, research examining whether older children at-risk receive greater benefit from dialogic reading than younger children at-risk is needed.

A small sample size is appropriate for the current research design. However, future studies may wish to recruit additional participants in order to implement an experimental design and utilize inferential statistics. Employing a control group would be an effective means to investigate the additive benefits of parent dialogic reading techniques while guarding against participant effects and maturation. Maturation, in particular, was an area of concern in the present study that would benefit from follow-up investigation using experimental design. In addition, random assignment to either the control group or the experimental group (i.e., those assigned to the dialogic reading intervention) would control for variables such as beginning language skills and maternal level of education. Overall, additional research is needed and would be highly beneficial.

Implications for Future Practice

Results of this study have implications for the fields of school psychology and early childhood education. Findings support the existing research base for the effectiveness of videotape dialogic reading technique training. All parent trainings were able to be conducted in a limited amount of time with modest resources. Parents were receptive to video-based training and also reported enjoying other “real parents” model the various dialogic reading techniques. These results should influence the decisions

made by school psychologists serving families with low-SES regarding intervention needs of children at-risk for early literacy skills development.

As described in detail throughout the literature review, parents play a crucial role in combating the illiteracy cycle within low-SES populations. Parents with low-SES value their children's education and want to support their children's academic success (Drummond & Stipek 2004). Researchers have found that even when the desire to become involved is present, actual involvement may still be unsatisfactory (Drummond & Stipek 2004). The relative success of the current study and the primary limitation with regard to potential self-selection bias conveys the need for school-based practitioners to facilitate parental involvement.

Future research may be needed to further explore this complicated topic and better understand why many parents with low-SES demonstrate inadequate involvement in their children's education. Additional research is also needed to develop interventions aimed at increasing parents' involvement with their children's school that can be implemented in low-SES school contexts, perhaps by eliminating obstacles that prevent the ability to become adequately involved. School-based practitioners must also provide support to parents by offering them empirically-based strategies that can be used at home to foster the development of their children's language and reading skills. Furthermore, implementation of these strategies must be feasible in the real world. Strategies that are time-intensive, cost-prohibitive and those that require advanced maternal education would be difficult to implement with integrity or fidelity in the low-SES setting.

Although additional research is needed to examine the relationship between home-based dialogic reading techniques and language growth in older preschoolers with

low-SES, implementation of a dialogic reading intervention is feasible in actual home settings. Whether it was implemented with integrity and fidelity cannot be determined at present. Intervention implementation and the need for further caregiver support, such as conducting additional training sessions to review age-appropriate dialogic reading techniques, warrants follow-up investigation.

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